

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

GLEANNINGS

IN BEE CULTURE

CONTENTS

MARKET QUOTATIONS	160
STRAWS, by Dr. Miller	167
PICKINGS, by Stenog	169
CONVERSATIONS WITH DOOLITTLE	170
EDITORIALS	172
A Foul Brood Bill	172
Possible Winter Losses	174
Slate vs. Iron Roofings for Hive Covers	174
Last Report of the National; its Cost	174
Home-made vs. Factory Hives	175
GENERAL CORRESPONDENCE	176
The La Bounty Wax-Extractor	176
Metal-spaced Hoffman Frame	178
Fumigating Combs	179
Eastern Honey in Paper Bags	180
Langstroth's Invention of the Movable Frame	182
Food for Colonies Short of Stores	183
HEADS OF GRAIN	184
What is Bee Poison?	184
Objections to Fences	184
Why Bees Don't Pay on the Coast	185
Atwater's Entrance-Contractor	185
Death of W. R. Graham, of Texas	185
Cleveland's Bee-Escape and Brood-Frame	186
The Starkey Cover	186
Consumers Disgusted with Corn Syrups	186
Finding Queenless Hives	187
Buying Bees in the Fall	187
Yellow Jackets and Mosquito-Hawks	187
Starting Anew After Winter Losses	188
Another Way of Using Formaldehyde	188
OUR HOMES	189
GARDENING	191
SPECIAL NOTICES	204

THE A.I.
MEDINA



ROOT CO.
OHIO

Western Edition.

ENTERED AT THE POSTOFFICE AT MEDINA, OHIO, AS SECOND-CLASS MATTER

DANZENBAKER HIVE

"FACTS ABOUT BEES" A 64-page book written by Mr. F. Danzenbaker, giving a complete description of his famous hive and directions for using. Full of valuable information. Sent free on receipt of a two-cent stamp to pay the postage. Send for it.

The Danzenbaker Hive.

The comb-honey hive. Three points of excellence: **QUALITY**—You can produce better-looking honey. **QUANTITY**—You can produce more of it. **PRICE**—You can get more per pound for it.

The Best Bee-keepers use it.

Mr. Hershisser, manager of the New York State apiarian exhibits at the Columbian Exposition, 1893, where he won credit for himself and State by his magnificent display of comb honey, was selected as superintendent of the apiarian exhibits at the Pan-American Exposition. Being an up-to-date bee-keeper, and having a keen interest in the latest apicultural appliances, he installed a trial apiary of 10 colonies of working bees, mostly Italians, but with some hybrids, and one colony of black bees. The last named made the best record, storing 111 pounds in a Danzenbaker hive.

I have kept bees three years, and owe my success to the Danzenbaker Hive. I shall as soon as possible send you a report of my honey crop. But one thing I know now, and that is, that one Danz. colony gave me over 100 lbs. first-class honey, while a ten-frame Dovetailed hive gave 25 lbs., and the Danz. winters in fine shape without feeding. Both hives had an equal footing.

JASON B. HOLLOPETER.

Union Bridge, Md., Oct. 26, 1903.

Danzenbaker's Sample Hive Outfit for First Orders.

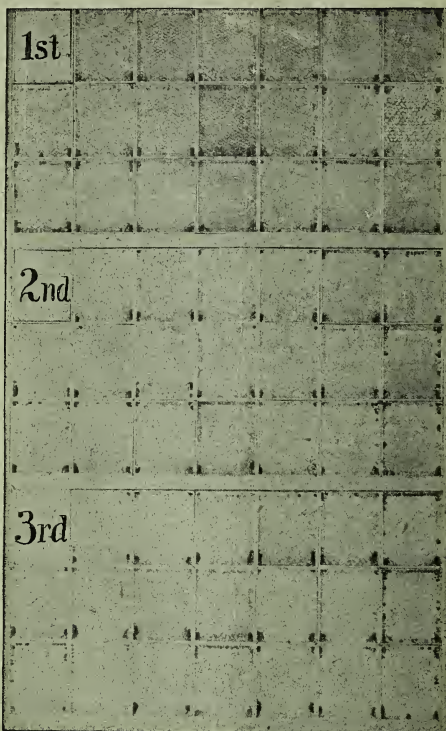
Five Danz. AD6 sample hives, 4 put together ready for paint, including covers and bottoms; one brood-chamber fitted complete as a model, fittings for the other four in flat, with foundation for one-inch starters \$7.00

Five Danz. 4M sample supers including sections and foundation starters. All 5 supers are nailed, and one has inside fixtures in place as a model, the fittings for the other four in flat..... \$4.75

The Best Comb-Honey hive.

I am very, very much pleased that you are willing that I should recommend the Danzenbaker Hive. I have had a great many inquiries about it, and have not felt at liberty to recommend it over our regular hives. At first I was prejudiced against it, but the sales have increased without recommendations, and wherever I have sold they have bought again and praised the hive with extravagant claims, and I am forced to the conclusion that it is the **BEST COMB-HONEY HIVE** on the market.

J. B. MASON,
Manager Northeastern Branch,
The A. I. Root Co.



PAN-AMERICAN PRIZE HONEY.

From a photo of the 60 prize Danz. sections produced in the State of New York.

First 20 sections, net weight 19 lbs. 11 oz.; stored in Danz. hives, awarded diploma and \$25.00.

Second 20 sections, net weight 19 lbs. 9 oz. stored in Danz. hives, in the trial apiary at the Pan-American Exposition, awarded \$15.00.

Third 20 sections, net weight 18 lbs. 13 oz.; produced in Danzenbaker hives, awarded \$10.00.

The great popularity of the Danz. hive has brought the shallow frame into prominence. It must be remembered that no other hive contains the essential points of the Danz.

JOHN NEBEL & SON, High Hill, Mo.

**The Old Established Supply-house
for Missouri and the Southwest.**

Bees and Queens in Season

GLEANINGS IN BEE CULTURE

A JOURNAL DEVOTED
TO BEES,
AND HONEY,
AND HOME
INTERESTS.

ILLUSTRATED
SEMI-MONTHLY

Published by THE A. I. ROOT CO.
\$1.00 PER YEAR MEDINA, OHIO.

Vol. XXXII.

FEB. 15, 1904.

No. 4



"BEGINNERS had better clip the wings on one side only," p. 134. Good advice for beginners. Equally good for veterans.

YEARS AGO the Germans were trying to find what would hasten granulation in honey, and they decided, just as we have, that agitation is the thing.

NEW JERSEY bee-keepers would do well to send 50 cents each to Geo. N. Wanser, Cranford, N. J., to become members of N. J. B. K. Ass'n, and then that association should join the National in a body.

THE USUAL SPACE left by the bees between two surfaces of sealed honey, or between honey and separator, is $\frac{1}{4}$ inch. Sometimes, however, the bees make a greater space—I wonder why. Before me lies a section showing that the bees left a space of $\frac{3}{8}$, making the comb $1\frac{1}{8}$ instead of $1\frac{1}{4}$ thick, and it looks still thinner than that. [While bees have an approximate rule about spacing, yet there are a good many variations, as I have noticed. But is not the average space usually a trifle under $\frac{1}{4}$ inch? The space between the surfaces of sealed brood will be wider than between surfaces of honey, as a rule.—ED.]

THAT TRIP on the glass-bottom boat—the one A. I. Root tells about, p. 141! I was seasick on the steamer going over; but the minute I struck land I was over it, and enjoyed to the full those wonderful sights at the bottom of the ocean. Then we had that delicious fish dinner Bro. Root tells about. I don't remember what we paid for it, but I remember that I thought it a very moderate price; but before I was through with that dinner, coming back on the steamer I thought I paid dearly for it. I thought I had been sick going over; but coming back

—oh my! We passed a whale in full view, and there was a big rush to see it. Never a rush did I make. What cared I for whales? My mind was otherwise occupied.

J. E. JOHNSON talks in *Am. Bee-keeper* about applying formalin gas in a hive full of bees, and killing foul brood without killing the bees. Sounds crazy-like; but knowing the man I've some faith in what he says. He makes the point that *Bacillus alvei* being vegetable, and the bee animal, what is fatal to one is not necessarily fatal to the other. [This is a matter on which it would be interesting to have some bacteriologist enlighten us; but is it not true that, when the gas is used very strong, it kills the bees? and has it not been stated that it must be used strong in order to kill the spores as well as the active bacilli?—ED.]

YOU "HAVE SECURED uniformly good results with a $\frac{7}{8}$ -inch space" under bottom-bars, Mr. Editor, p. 135. Just so; but some of us with conditions not perfect will be safer with 2 inches. Even with two inches the cluster will sometimes be down on the bottom-board, and then it's hard to clean away the dead bees. A $\frac{7}{8}$ entrance might be clogged where 2 inches would be clear. "Pretty bad wintering to clog a $\frac{7}{8}$ entrance?" Sure; but then there is some bad wintering. [If the entrances are kept reasonably clear, is it not true that $\frac{7}{8}$ depth would be enough? Is it not a fact that any bee-keeper who winters indoors should look to his bees occasionally?—ED.]

M. D. ANDES makes number-tags by means of an indestructible set of dies costing 50 cents. Pieces of sections thus punched will last well, if they could only be made to be seen at several rods' distance. Could rubber stamps or other type be made to print on wood with weather-proof ink? How would printing-ink do, covered with varnish or oil? [Rubber stamps can be made, and regular printing-ink, or, better still, indelible pad ink, could be used very satisfactorily. The complete set with figures $1\frac{1}{2}$ inches high with an indelible pad would cost 75 cts.; but a cheaper thing, and perhaps as good, is a set of brass stencils.

These we have been furnishing all the way from 0 to 9, figures $1\frac{1}{2}$ inches high, for hive-numbering purposes, for 35 cts.—ED.]

BRO. A. I. ROOT, please allow a word in defense of W. D. Null. p. 134. As I understand him, he was only sowing sweet clover on his own land, as he says, "I have tried to get *our* fence-rows and waste patches seeded." [Well, now, doctor, I may be dull, but I don't just see your point. If sheep, goats, and horses search out sweet clover, and keep it down, how is anybody damaged by having it started in the roads and fence-corners, even if said roads and fence-corners adjoin some other man's land? I never heard a farmer complain because red clover was growing in his fence-corners or waste places; and is not sweet clover worth as much or nearly as much as red clover?—A. I. R.]

THOSE FLYING FISH in the Pacific Ocean didn't look to me as they did to A. I. Root, who thinks they "never flap their glossy wings while in the air." To me the biggest part of them was "flap." Page 141. [Doctor, it has occurred to me that I did not say enough about the "flap" part. These fishes had comparatively large wings, and the wings were as transparent as the film of a soap-bubble, almost. Of course, they were concave more or less; and when the rays of the sun struck this concave part, these wings flashed like diamonds. To me it was a remarkable treat; and I wondered to see the passengers all around me so indifferent to the charms of this wonderful spectacle.—A. I. R.]

A MAN who was growing tomatoes in a greenhouse with indifferent success, says M. F. Reeve, in *Am. Bee-keeper*, put in a hive of bees, and was enthusiastic over the results. "He said the tomatoes were in greater profusion, and ripened much better, and at a time when they brought more money." [I believe that at the present time all successful greenhouse-men have bees in the house where they undertake to grow tomatoes, cucumbers, or any thing else that requires fertilization. Taking the pollen from the blossoms with a camel's-hair pencil, and transferring it to the other ones, answers in a measure; shaking the plants so that the pollen will rattle off in the form of dust has also been practiced; but I think all have decided that the bees work cheaper, and do a far better job, than any clumsy manipulating such as I have mentioned.—A. I. R.]

JOHN HEWITT, the British queen-breeder, says he gets more queens started when larvæ are given without than with royal jelly. He takes strips of drone comb after the Alley plan, uses drone larvæ two days old, and when queen-cells are about half built over these he replaces the drone larvæ with worker larvæ just out of the egg.—*American Bee-keeper*. [Some queen-breeders do not use royal jelly, claiming that it is not essential. Others say that the old jelly is removed and new made to take its

place. Whether it is or not, it has been our experience that the cells are more readily accepted, as a rule, when supplied with this royal food than when not so supplied. It gives the bees a suggestion that something has been done toward making a cell by supplying a food fit to rear a princess. There, I do not know but some one will now object by stating that royal jelly is not essentially different from the food supplied to worker bees.—ED.]

ORGANIZATIONS in Germany probably have a larger membership than our National, says ye editor, page 115, "but somehow we do not hear about their kicking up very much dust." No, we're so busy with our own affairs that we don't know what's going on abroad. The fact is, there's a good deal bigger dust kicked up there than here; they have bigger memberships, bigger conventions, and take up a good deal bigger space in the bee-journals than does our National. Oh, yes! we've got to do some lively kicking before our dust equals theirs. [What I meant by "dust-kicking" was the defense of bee-keepers' rights; the establishment of valuable precedents in law; fighting adulteration; securing legislation favorable to bee-keepers. The getting-up of a great big convention, and passing of resolutions, probably does not influence much the great outside world around us, that does not care a penny about our interests. Is it not true, doctor, that the National stands pre-eminent above all other organizations because it *does* things? We can write and we can talk; but unless we *do* things, in my estimation we are not "kicking up very much dust." Is there any organization in all Europe (and I am asking for information) that is as powerful a factor in law and in general legislation as the National on this side of the hemisphere?—ED.]

YOU ARGUE in that first footnote, p. 116, Mr. Editor, that your queen-rearing methods are all right, just as if I had been questioning them. Bless your heart! I never thought of such a thing. Very likely you're right when you say "we believe one will not go very far astray if he follows us implicitly." But how under the sun is one to follow you in making nuclei without imprisoning them if you don't tell how? Merely saying, "Where one knows how" is only exasperating. Turning to the question itself, your answer satisfies in part. I think a beginner would understand that he is to select frames of brood soon to hatch; but I think he would be badly puzzled to know *how* to give "a larger proportion of *young* bees to the nucleus." [Why, the easiest thing in the world, doctor. It has been our experience that a light shaking of a comb will disengage the old bees and a few young downy ones, and leave nearly all the active young bees. When we form nuclei, or at least that was my rule, we give each frame of bees before moving to another location a light shake. The young vigorous Italians—those that have hardly begun to

do field work, and which have, perhaps, never taken wing, will stick to the combs, while a majority of the older ones will fall off. The few that do cling will, of course, go back; but their return will not perceptibly weaken the nucleus. I feel sure you must know of this trick unless you have been working with hybrids so long that you had forgotten it; but it works like a charm with pure Italians. Hybrids and blacks all shake easily, young as well as old.—ED.]

GLYCERINE, a small per cent, put in honey to keep it liquid, p. 120. I'm afraid of that—very much afraid of it. We raised a howl against putting in glucose to keep from granulating, and this is just a little like it. The higher price of glycerine makes a difference, but—but— [Your last unfinished sentence answers your own question. Adulteration, properly speaking, is the putting of a cheaper ingredient into a more expensive article for the purpose of deceiving, and lessening the cost of the product. If two per cent of glycerine would prevent granulation, let us say 2 lbs. in 100, would any one call it adulteration, when glycerine at wholesale costs 20 c. per lb. as against 6 or 7 for extracted honey? It was once said that 10 to 20 per cent of glucose would prevent granulation. The larger the quantity, the more sure the prevention. But glucose costs less than one-fourth as much as honey; and it is very evident that the people who first advocated glucose to prevent granulation did so simply to cover up a deeper-laid scheme of cheapening the product, with the intention of selling it as pure honey, and *not* to prevent granulation.]

But we do not know yet that glycerine will have any effect; and if it does I should not think of using more than two or three per cent. Indeed, I question whether any one could afford to use any more. Let's see: 100 lbs. of extracted, we will say, would cost \$6.00. Suppose we should put in 3 lbs. of glycerine, worth 60 cents. This would be enough to wipe out a good profit. The margin on honey is close; and if one could make 10 per cent on his honey, or 60 cents, he is making a fair profit—that is, when he is buying to sell again. But you might argue that a man who bottles his honey, and gets 20 cents per lb. for it at retail, could afford to use the glycerine to the extent of two or three per cent or more. But does the one who receives 20 cents retail actually make much more than the one who wholesales in barrels and square cans at 7 to 8 cents? We must deduct the cost of the glass package, the cost of bottling, labeling, washing of the bottles, corks, etc. Now that I have asked this question, whether one can make more money bottling than he can to sell at a good price wholesale, I am wondering whether our subscribers can not help us in the solution of it. I once talked with a large bottler, and he told me that if he could get a good fair wholesale price for his honey in bulk he could actually make

more clear cash than he could to bottle. Then why did he put it up in glass? Simply because, a good deal of the time, he can not get his price for bulk honey, and he is obliged to bottle in order to make the necessary profit in his business.—ED.]



Speaking about "kicking up a dust," the Austrian Imperial Union, or what might be translated as such, which includes nearly all Austrian bee-keepers, is making itself felt. Its first action was to interview the Commissioner of Railways to see if he would not have the railway-beds of that kingdom planted with honey-bearing flowers. The attempt was perfectly successful. That, certainly, is a step in the right direction, not only in the securing honey, but in getting unsightly weeds out of the way.

The Central Union, in Prague, has secured for its members very cheap insurance on bees. For the trifling sum of 8 cents every member of the Union is insured, per colony of bees and hive, against loss by fire, storm, and thieves. So much for foreign dust.



BRITISH BEE JOURNAL.

A correspondent writing from Natal, South Africa, says:

I had some very pretty sections of comb honey last year, some filled with pure orange-blossom honey as white as snow. Then I had some thinner sections, darker honey, from the mango trees. Many people I showed the sections to here said it was the first honey they had seen "made to order" and one lady insisted it had been made by machinery!



A writer makes the following sensible suggestion. Perhaps the National may have to consider the matter some day:

I should be glad to know whether it is legal to describe as "honey" any production otherwise than the nectar gathered by bees from the flowers. For example, would it be legal to describe glucose as "glucose honey," or treacle as "treacle honey"? If it be not legal, I think it is the duty of bee keepers to take such action as will at once cause the withdrawal of a certain advertisement, headed, "Honey without Bees," and as a sub-head, "A New Food Delicacy."



In the issue for Jan. 21 the editor says:

It is with sincere regret and sorrow that we have to announce that the *Revue Internationale* closes its useful career after an existence of twenty-five years. We have the last number before us in which M. Ed. Bertrand, the venerated originator and editor of the paper, takes leave of his readers. Many papers are started, and after a short existence disappear without being missed; but with respect to the *Revue Internationale*, we venture to think the regret will be universal, and the void created will be long felt. All bee-keepers acquainted with the French language read with interest what appeared in this, the leading expositor of the movable-comb system on the Continent of Europe, and looked forward to its appearance

monthly, and they will keenly feel the loss of it. M. Ed Bertrand at the age of seventy-two has well earned his retirement, and has the satisfaction of seeing the methods he has so ardently advocated pretty generally adopted, not only in his own native country, but also in France and other countries.

Further on is the following:

M. Bertrand, it was known, was not only a practical but a successful bee keeper and his advice could always be relied upon. Having also successfully fought foul brood he was able to give such advice as has been the means of curing many diseased apiaries.

Being acquainted with several languages M. Bertrand has kept his readers informed of the progress being made in England, America, Germany, and Italy. It was with this object in view that the "British Bee-keeper's Guide Book" and "The Honey Bee" were translated by him into French, as was also that most complete work on "Foul Brood of Bees" by F. C. Harrison.

The above is well-deserved praise for one of the most prominent bee-men of the world. Personally, too, as much may be said for him. Perhaps we shall yet hear from him through other journals.



COLMENERO ESPAÑOL.

Judging from what I have read in the new Spanish bee journal, *El Apicultor*, Mr. Mercader-Belloch, the late editor of the journal I am reviewing, was what the "weather-prophets" term a "reactionary storm-center." The editor says of him, apparently with a feeling of charity too:

We do not wish to speak of his defects. Who does not have them? We will simply say that his own personal interests counted with him as nothing when they stood in the way of his gaining his great object—that of occupying the first place among Spanish bee-keepers, and to hold absolute authority over any of their criticisms. For that he sacrificed friendships, forgot the services of others, and stirred up antipathies against those who presumed to deviate from him so much as a line or to contradict any of his affirmations, and wound up by finding himself alone in the management of *El Colmenero*, which at last was a faithful reflection of the decay of mind of its melancholy editor.

The writer of the above, long the right-hand man of Mr. Mercader-Belloch, then relates the difficulties they had in finding a suitable place to establish an apiary. The best they could do was to take up with a piece of rocky and unproductive land, and use it as the center of a series of apiaries around among those steep mountains.

Nothing could be more discouraging to a man of his disposition than to meet with repulse in his own land; and that will account largely for the following from his pen, concerning bee-keeping in Spain. It is the last of a review which he wrote about bee-keeping in different countries, which I have already given. He says:

Our country continues behind in general in all branches of industry, and apiculture is no exception—quite the contrary. Aside from a few persons who have devoted themselves to the improvement of agriculture and other industries, the nation in general looks with contempt, not only on bees, but on agriculture at large. In this unfortunate country which has been styled "the land of opposites," the people learn with zeal to make all kinds of goods, while Spain lacks the conditions necessary to compete with other nations. . . . Some hope, or pretend to, to make Spain an industrial nation like England and the United States, which would simply work her ruin, as it would concentrate many in the large cities and depopulate the rural districts. This would create conflicts which, in time, would cripple all departments of government, and work the ruin of the very class it is designed to protect. . . . Here in Spain it is very

difficult to put in practice modern systems, as the people are opposed to every new thing. Let us enumerate some of the almost insuperable difficulties that present themselves to a progressive man: 1. The characteristic indolence of the people; 2. A kind of fear which workmen have for the gatherer of statistics for it is usual for them to refuse absolutely to give any data on which to base apicultural statistics; and without that, nothing can be done 3. The refusal of those same bee-keepers to communicate a report of their failure and success to this journal, for we should like to publish all.

The above is not exactly bees, but it is worth considering by the bee-men of this country and Canada. In the last 50 years the price of labor in Spain has fallen from 53 to 47 cents per day, while the cost of living has greatly advanced. With superior natural advantages, Spain has stepped down from her position as first among nations at the time Columbus was imprisoned by her for giving her a hemisphere, till now she is the seventh power in the world, which is equivalent to saying she is nowhere. Discontent broods over her borders, and revolution over her interior.

Mr. Mercader-Belloch was a good man, a very able one, and one who was highly gifted with true greatness of mind.



MAKING SUGAR SYRUP FOR FEEDING BEES.

"Mr. Doolittle?"

"That's my name."

"My name is Barber, and I came over to have a talk with you about making feed for bees out of sugar. I know you have told how you do this in some of the bee-papers, but I can not turn to where it is."

"I suppose it is spring feeding you want to do."

"Yes. But I want to know how to make sugar syrup for feeding at any time of the year. But perhaps we better talk about how to make the syrup for spring feeding. How about this part?"

"It is not so very essential regarding how it is made for spring feeding as for fall, as the bees can fly often in the spring, while in fall they should be fed in view of their winter repose and quietude, as much as possible. But for early spring feeding I should make the syrup "richer" than later on. Will you have to feed the bees during March, do you think?"

"Very many of my colonies went into winter light in stores, and I fear they may starve soon; and that is the reason I come to you for advice on this matter of making feed for them."

"For feeding bees early in the spring, before they can fly every few days, I should make the syrup after a formula I have used

with success in years gone by, which is as follows: Fifteen pounds of water is weighed up and put into a tin vessel of suitable size, when this vessel is put over the fire till the water boils, at which time twenty pounds of granulated sugar is put in, the same being done by slowly pouring it into the water while the whole is being stirred, so that the sugar shall not all go in a heap on the bottom of the vessel, and a part of it scorch or burn there, as is often the case where a great lot of sugar is poured into any kind of vessel set over a hot fire, as in such case the water will not keep the sugar from settling on the tin, and scorching or burning."

"I am glad you spoke of this. I burned some syrup in making one time, and I did not then know the reason for it; but I now remember I poured the sugar right in without stirring and left it till it boiled. But go on."

"After stirring the sugar in till it has mostly dissolved, the whole is left till it boils again, when it is set from the fire, and three pounds of honey is stirred in, to keep the syrup from granulating or crystallizing, and to give a better relish for the bees."

"Is this honey a necessity where a person has none to put in?"

"No, it is not absolutely necessary at this time of the year; but I have been of the opinion that I got better results where I so used it, and have often put in three or four combs from partly finished sections where I did not have other honey to put in. The wax that will come from the comb can be taken off when the whole cools, so this will do no harm by way of interfering with the manipulation of the syrup. This will give you 37 to 38 pounds of the best feed I know of for very early feeding, and you can cut the formula in half, double it, treble it, etc., in accord with your needs and at your pleasure."

"How do you feed it?"

"I use a division-board feeder at this time of the year, and, in fact, at all times of the year. Just take out a comb where it will come right up to the cluster of bees, then put in your feeder in place of the comb; pour in your feed, having the same a little more than blood-warm, when the bees will take it all up before it gets cold, unless the weather is very severe."

"How often would you feed?"

"I would give a feedful at a feeding; and by doing this, one feeding will last the colony for a week to ten days, thus giving you a chance to choose a mild day for the feeding process."

"Do you make all the feed, and feed in this way with all spring feeding?"

"No. As spring advances I use a light brown, or what is called No. 1 C sugar. With this I put in fifteen pounds of sugar to the fifteen pounds of water, bring to a boil, and leave out the honey. Feeding after the bees can fly nearly every day is done mainly for stimulating brood-rearing; and I find that C sugar has a better effect

in accomplishing this object than granulated sugar; but the bees must have a chance to fly often when feeding this grade of sugar, or they are likely to suffer from diarrhoea."

"How often do you feed with this syrup made from C sugar?"

"Generally every night, doing the feeding in the twilight to prevent any chance of the bees robbing out or trying to rob the colonies being fed."

"How long is the feeding kept up?"

"Till the flowers begin to yield honey or nectar. When this comes about, it is not necessary to feed to keep the bees from starving or for brood-rearing, as nectar from a natural source is always better in every way than that which comes from a feeder."

"Well, how about fall feeding, as I see that it is nearly time for me to be going?"

"Feed for fall feeding is made in this way: Fifteen pounds of water is used, as I told you at first; and when this boils, 30 pounds of granulated sugar is stirred in (as I told you to do), instead of the 20 pounds there used; and when this is about to boil, all scum which may arise is carefully skimmed off, so that the syrup may be as free as possible from all impurities. After boiling, it is set from the fire, and five pounds of good thick extracted honey is stirred in."

"Do you consider the honey necessary when feeding in the fall for winter stores?"

"I certainly do. When syrup is made thus, so it is of the consistency of honey before feeding, as it always should be when feeding after the harvest is past, for winter stores, it will crystallize (with me) in the feeders, where no precaution is used; and in my many experiments which I made to find out the best feed for winter I even had it harden in the cells after being stored there by the bees, where nothing was used to prevent this crystallizing, as some have recommended. This five pounds of honey is sure proof against all these troubles; and as it is of itself good feed for bees I do not see why any one should object to its use, even if the same had to be bought. But this buying is not generally necessary, even in a very poor season, if the bee-keeper keeps an eye on his knitting, as all successful bee-keepers will."

"How about the feeding of this syrup?"

"It is fed from a division-board feeder, the same as before; but as much feed is given each evening as the bees will carry down during the next 24 hours, till the needed amount required for winter is given. About 25 pounds will generally be used during the three first days after commencing, and that is generally considered sufficient for the safe wintering of any colony. If colonies have $\frac{1}{4}$, $\frac{1}{2}$, or $\frac{3}{4}$ of this amount of honey in their combs, the feeding of a sufficient amount to supply the lack is all that is required."

"Well, I thank you for this interview. I must be going now."



READ the proposed foul-brood bill below.

THIS is probably the severest winter that bee-keepers have experienced for over 20 years. It has been continuously cold since the first of December, with only two days when the bees could fly.

I CAN only wish that all of our bees that are on their summer stands were indoors in one of our bee-cellars. I am fearful we shall have heavy losses among the outdoor bees before warm weather sets in in the spring.

THE bee-keepers of Ohio are requested to write to their Senators and Representatives at once, and ask them to support the bill for the suppression of foul brood. This bill is now pending before the House. If you don't know who the members are, ask some county official or your postmaster. It is very necessary that you write at once.

A FOUL-BROOD BILL BEFORE THE OHIO LEGISLATURE.

AS I have before reported in these columns, the bee-keepers of Hamilton Co., O., have been very active for some time in the matter of securing foul-brood legislation for Ohio. In the southern part of the State the dread disease has been making considerable progress, especially with the box-hive bee-keeping class; and the up-to-date bee-keepers have been simply forced to take this course in self defense.

It seems the disease was imported from Kentucky; and in spite of all the bee-keepers on the border-line in this State could do, it has been making headway against them because there was no law by which they could compel the box-hive men and others to treat their colonies. In other portions of the State—notably in the northern part—the disease has made some inroads from Michigan. Taking it all in all, it seems as if now were the time when we should have suitable legislation—when the traditional “stitch in time” would “save nine.”

It has cost other States large sums of money, particularly Canada, New York, Wisconsin, Michigan, and Colorado, while the direct cost to the bee-keeping industry has been enormous. In some sections of New York, bee-keeping has been well nigh wiped out, where, under ordinary conditions, bees have made good money for their owners, and could do it again.

It is very necessary that the bee-keepers in every State where no laws are in force get some bill before their legislature this

winter, and, if possible, get it passed so that the necessary stitch in time may be taken.

That is precisely what the Ohio bee-keepers are trying to do, and none too soon either. A bill has been presented by the bee-keepers of Hamilton Co. that has been modeled after the excellent law that is in force in Colorado. As will be seen by the text herewith given, it is a *county law*. Whenever foul brood or any other contagious disease is found to exist in any particular county, on the complaint of three citizens the county commissioners shall appoint an inspector who shall make the necessary investigation; and if he finds the disease to exist he shall, under the provisions of the law, order the necessary treatment to be carried into effect. There are suitable penalties for failure to comply with his orders. Among the provisions, it will be noted, is one requiring box-hive men who are supposed to have foul brood to transfer on to movable frames.

Now, while, generally speaking, a State law with one inspector has proven to be more satisfactory, and while it is true, also, that certain measures of this kind have been repealed in favor of a general State law, yet a careful canvass of the situation on the part of the Ohio bee-keepers seems to show that the Colorado law is the only measure we could get at present in this State, as our General Assembly is somewhat shy about passing any bill that requires an appropriation, especially if it thinks the passage of the bill will create a “job” for some one. So many bills creating jobs have been imposed on them that it would be simply impossible to get a State law now. If the present measure shall prove to be inefficient it will serve as an excellent stepping-stone for something better. Michigan first had a county law for a few years, repealed it, and substituted a State law; but I understand that the bee-keepers of Colorado are very well pleased with the practical working of their county law, after which the Ohio measure is modeled, and it may never be necessary to ask for any thing better.

The Ohio bill has been thrown into the hopper, and is being considered by the Committee on Agriculture. A large representation of Hamilton Co. bee-keepers, as well as a representative of this journal, appeared before the committee, and stated the urgent need of the measure. General Manager France has furnished some data for the consideration of the committee. We have every reason to believe that the committee will report the measure favorably without amendment, and that the same will be passed without opposition. But bee-keepers all over the State are urged to write to their Senators and Representatives, and ask them for their support, and explain *why* the law is needed. If we get the idea that the bill will pass of itself, we shall be woefully mistaken. Every subscriber to this journal in Ohio should make a point to

write at once to his Representative and Senator; and that means you, and you, and you who read this. Do it at once before you forget it.

The following is the text of the bill that is now before the Committee on Agriculture for consideration. Hon. D. R. Herrick, of Hamilton Co., who introduced the measure, was once a bee-keeper himself. Quite a number of the Representatives in the House have been interviewed. I have seen several myself. Now it rests with the Ohio bee-keepers to do their duty, and do it soon.

A BILL

To provide for County Inspectors of Apiaries, and defining their duties and providing for their compensation, for the purpose of curing and avoiding foul brood or other diseases among bees and their hives.

Be it enacted by the General Assembly of the State of Ohio:

SECTION 1.—That whenever a petition is presented to the Board of County Commissioners of any county in the State of Ohio, signed by three or more persons, all of whom are residents of the said county, and possessors of an apiary, or place where bees are kept, stating that certain apiaries within said county are infected with the disease known as foul brood, or any other disease which is injurious to bees or their larvae, praying that an inspector be appointed by said Board of County Commissioners, said Board of County Commissioners shall, within five days after the presentation of said petition, appoint a person as bee-inspector who is a resident of said county, who shall be a skilled bee-keeper, having thorough knowledge of foul brood and other diseases injurious to bees and their larvae and the treatment of the same.

SECTION 2.—The person so appointed shall, within five days after his appointment, file with the said Board his written acceptance of the office, or, in default thereof, or in case of vacancy, the Board shall, in the same manner, make new appointments until the said office is filled. The inspector shall hold his office for two years, and until his successor is appointed and qualified, except when upon petition of ten persons (each of whom is a resident of said county, and possessor of an apiary), to the Board of County Commissioners of said county, may remove said inspector for cause, after a hearing of petitioners.

SECTION 3.—Any bee-keeper, or other person who shall have cause to believe that any apiary in his county is affected with foul brood or other disease, either in his own apiary or elsewhere, shall make affidavit, stating that, on information or belief, he believes that certain apiaries, describing the location naming the owner or keeper, are affected with foul brood or other disease, and his ground for such belief. On receiving said affidavit from any source of the existence, in any apiary in his county, of the disease known as foul brood, or any other infectious or contagious disease of bees, the county inspector of bees shall forthwith inspect each colony of bees and all hives, implements, and apparatus, honey and supplies on hand, or used in connection with such apiary, and distinctly designate each colony or apiary which is infected, and notify the owner or person in charge of said bees thereof, in writing or otherwise; and the owners of said bees, or the persons in charge thereof, practically and in good faith to apply, and thereafter fully and effectually carry out, to and upon such diseased colonies, such treatment as may have been prescribed by the said inspector for such cases; also thoroughly disinfect, to the satisfaction of the inspector, all hives, bee-houses, combs, honey, and apparatus that have been used in connection with any such diseased colonies; or, at his election, the said owner or person in charge of such bees may within the same time, utterly and completely destroy said bees, hives, houses, comb-houses, honey and apparatus, by first killing the bees (by the use of sulphur fumes when the bees are in the hives for the night) by fire, or bury the same in the ground with a covering of not less than two feet of earth.

SECTION 4.—The County Inspector of bees shall have the right to enter the premises of any bee-keeper where the bees are kept, and inspect such bees; and any person resisting or refusing to allow said inspection by said bee-inspector shall be guilty of a misdemeanor, and may be then and there arrested by said bee-inspector or person deputized by him, and brought

before a Justice of Peace, and upon conviction shall be fined not less than ten dollars nor more than twenty-five dollars.

SECTION 5.—After inspecting, working with, or handling infected hives or fixtures, or handling diseased bees, the inspector or other person shall, before leaving the premises or proceeding to any other apiary, thoroughly disinfect his own person and clothing, and shall see that any assistant or assistants with him have also thoroughly disinfected their clothing and persons.

SECTION 6.—The inspector shall have full power in his discretion to order any owner or possessor of bees, dwelling in box hives, in apiaries where the disease exists (being mere boxes without frames), to transfer such bees to movable-frame hives within a specified time; and in default of such transfer, the same shall become unlawful and the inspector may destroy, or order for destruction, such box hives, and the bees dwelling therein, as a public nuisance.

SECTION 7.—Should any owner or keeper of, or other person having diseased bees, or their larvae, or of any affected hives or combs, appliances or utensils for bee-keeping, sell or barter, or give away the same, or allow the same or any part thereof to be moved, such person shall be guilty of a misdemeanor, and upon conviction such person shall be fined not less than ten dollars nor more than twenty-five dollars.

SECTION 8.—Should any person whose bees have been destroyed or treated for foul brood sell, or offer for sale, any bee-, hives, or appurtenances of any kind, a ter such destruction or treatment, and before being authorized by the inspector to do so or should he expose in his bee-yard or elsewhere any infected comb, honey or other infected thing, or conceal the fact that such disease exists among his bees, such person shall be guilty of a misdemeanor, and upon conviction such person shall be fined not less than ten dollars nor more than twenty-five dollars.

SECTION 9.—If any owner or keeper of bees knows of, or after being notified by the county bee inspector that foul brood or other infectious or contagious disease exists in any of the hives in the apiaries owned by or in charge of said persons, and shall fail to comply within ten days from receiving said knowledge, and the date of receiving instructions from the county inspector to cure or destroy the bees or hives, or their appliances, such person shall be guilty of a misdemeanor, and upon conviction thereof such person shall be fined not less than ten dollars nor more than twenty-five dollars.

SECTION 10.—When the owner or possessor of bees shall disobey the directions of said bee inspector in curing or destroying any diseased bees, honey, hives, or appliances they shall become unlawful and a public nuisance, and the said bee-inspector shall at once destroy said bees, honey, hives, or appliances, and may deputize such additional persons as he may find necessary to effect said destruction.

SECTION 11.—The county inspector shall make a monthly report in writing, under oath, to the Board of County Commissioners, in which report he shall state the days and number of hours in the preceding month spent by him in the actual discharge of his duties and shall in said report state the name of the owner or keeper, and the location of the apiary upon which such time was spent in curing or destroying said bees, together with an itemized account showing the dates and amounts, for what incurred, money spent for any discharge of his duties, and to whom the same was paid, and for what services and considerations such indebtedness was incurred, and accompany said report with the affidavits given him under and in pursuance of Section 3 of this act, and make full and complete report of all he did, and results of his treatment of any apiary.

SECTION 12.—After the county inspector of bees in any county shall make report, as provided in the preceding section, said county commissioner shall allow him pay to said county inspector of bees two dollars for a full day and one dollar for each half-day necessarily and actually employed in the discharge of his duties under this act, together with his necessary and actual expenses while so employed, to be audited, allowed, and paid by the county officers.

SECTION 13.—This act shall take effect and be in force from and after its passage.

NO HALF-TONES THIS ISSUE.

It will be noticed that in this issue all half-tones are omitted. We have quite a number of them on hand; but owing to the

fact that a special kind of paper that we have been expecting, for the printing of such plates, has not arrived, we are putting in a larger number of pen-drawings and a larger amount of other matter which we have no doubt will prove to be fully as interesting. In our next issue we hope to begin again the regular series of half tones.

POSSIBLE SEVERE WINTER LOSSES.

THE reports in regard to losses from outdoor-wintered bees are decidedly unfavorable. In some localities it is stated that the bees have all died off. In others, there are strong indications of dysentery. This may be one of the very severe winters. It is impossible at this date to state just what the actual results will be. The failure of the honey crop in California and in Cuba, and possible heavy losses in the northern part of the United States, will put a serious damper on the honey business for 1904.

SLATE V. IRON ROOFINGS FOR HIVE-COVERS, AGAIN.

WE have just been talking with a sheet-metal man regarding the matter of roofings. He admits that the new tin roofings are very short-lived; that any of the roofings using sheet *steel* covered with either zinc or lead are very much inferior to the roofings made of old process *iron* coated with the same metals. Genuine galvanized iron—that is, iron covered with zinc—costs over one and a half times as much as sheet steel covered with the same metal. The same is nearly true of the lead coated plates. But our sheet metal man urged that sheet steel covered with lead was as good as or better than the same metal covered with zinc; that ordinary *terne* (lead-covered) steel plates are very good.

Contractors and builders are beginning to demand the iron plates, even at the fearful advance in price; for it begins to appear that the sheet steels are dear at *any* price. Some of them will rust out in one year's time. Old iron roofings that have been down for twenty years are often as good as new steel roofings that have been down for only two or three years.

It is apparent that we can buy iron roofings if we pay enough money. But how is any one going to be sure he is getting what he pays for? I claim to be a fair judge of metals; but I confess I can not see or feel any difference between an iron and a steel plate when covered with tin or zinc.

COST OF ISSUING THE LAST REPORT OF THE NATIONAL.

IN the detailed expense account of the last report of the National Bee-keepers' Association there was one item that was conspicuous by its absence; namely, the expense of printing the report itself. That was, no doubt, due to the fact that the bill for the printing had not been received by General Manager France at the time he

prepared his copy. I have since obtained from him a statement of the entire cost of printing the report, and the amount he received from advertising in the same. Mr. Hutchinson's bill for the printing was \$141. There were 11 pages of advertising at \$6.00 per page, or \$66.00 in all, making a net cost of \$75.00 for the entire report, or 3 cents per copy.

As a general thing, advertising in pamphlets, reports, and books, is not as profitable as the same amount of space in periodicals. It is a difficult matter to secure from manufacturers and dealers very much advertising in pamphlets; but Mr. France succeeded in getting nearly half the cost of the report in advertising; and by so doing he deserves the thanks of the members.

HOME-MADE VERSUS FACTORY HIVES; WHY THE FACTORY HIVE IS AS CHEAP AS THE HOME-MADE ONE; A REPLY TO EDITOR HUTCHINSON.

IT will be remembered that the editor of the *Bee-keepers' Review* and I have been holding a friendly controversy on this subject, he taking the ground that the recent advance in the price of hives is a sufficient warrant for bee-keepers to make their own, or get them made at the local planing-mill. I took the ground that the average clear white-pine lumber, without knots, such as factory hives are made of, costs from \$30 to \$60 per 1000 feet in the open market; that the eight-frame story-and-a-half L. hive with Hoffman frames had about 20 feet of lumber, including frames and necessary waste. This would make the bare cost of the lumber, without any work on it, come to anywhere from \$1.00 to \$1.20 per hive. Factory hives in hundred lots list at \$1.25. I admitted, among other things, that some bee-keepers in some localities could make their own hives cheaper than they could buy them; but I did not think that the average person, in an average locality, could save money by making his own.

In the last *Bee-keepers' Review* the editor in his rejoinder states that he can buy, in his market, lumber with knots in it for \$28 per 1000 feet; that he estimates only 10 feet in a hive, not including frames or waste. But he was figuring on a *one-story* hive narrower than the standard, while I was figuring on a *story-and-a-half* hive including Hoffman frames, wider, and including division-board. And he believes, further, that the knotty lumber is good enough; that "the man who buys his own lumber, and has it cut up at the planing-mill, lets these knots go right in; . . . most of these knots are sound; . . . while a loose knot does no harm in the side or bottom of a hive. One or two wire nails driven through the surrounding wood into the knot will hold it in place. Even a knot-hole may be covered, if on each side of the board, by tacking on a piece of tin."

I can readily see that some people who make their hives might tolerate this sort of

lumber with knots nailed into place, and strips of tin nailed over holes where the knots have dropped out; but a *manufacturer* who would let such stuff go out to his customers would be run out of business. Years ago we furnished hives with sound knots in them; but the trade became so exacting that it demanded clear stock—a demand that the large factories at least have met.

Bro. Hutchinson goes on to show that hives made of knotty lumber, not including frames nor allowing for waste (for no waste could be allowed for, as every thing goes), can be delivered at his door by the planing-mill, for $37\frac{1}{2}$ cents per hive; but the fact that he refers to buying lumber 13 inches wide, for covers and bottoms, shows that he is figuring on a smaller hive than the regular eight-frame Langstroth put out by the factories, and one story at that. Bee-keepers as a rule will not have a cover *just* wide enough. It must project at least a little on each side. But the Dovetailed hive takes a little more lumber than one with lap joints depending on nails to give the necessary strength, because the lock corner fingers pass by each other, and this makes a difference of $3\frac{1}{2}$ inches, 10 inches wide. Mr. Hutchinson also says he can get plenty of 13 inch lumber at \$30 per 1000. True, he can get sufficient for *his* needs; but the different factories would not be able to get enough of it—that is, of clear stock, 14 inches wide, not 13 inches. As a natural consequence it is cheaper to use the three-piece cover, which uses slightly more lumber, owing to the overlapping, and here again is an increase in the amount of lumber called for.

Bro. Hutchinson has inadvertently left a rather misleading comparison against the manufacturer. One is almost led to believe, until he looks into the matter carefully, that he can make his own hives for 51 cents apiece, as against factory hives at \$1.25 in lots of a hundred. Now, if we stop and analyze these figures we shall see what they cover. The $37\frac{1}{2}$ -cent hive of Mr. Hutchinson's is made of knotty lumber, some of the knots loose, and the knot holes covered with pieces of tin; the boards are probably roughly sawn, and possibly not all accurately cut. The hive itself is only about 13 inches wide, outside measure; it has no tin rabbets—at least none are mentioned, and it has no division-board. The all-wood thin-top-bar loose hanging frame is considered good enough, and these are purchased of a local dealer for $1\frac{3}{4}$ cents apiece, or 14 cents for eight frames, making the whole hive, one story, cost 51½ cents. The manufacturer, according to the latest list, in lots of 100, will furnish the standard Dovetailed hive, one inch wider, with division board, tin rabbets, *sound clear lumber, accurately made*, with all-wood frames, for 87 cents. Now, this same manufacturer can furnish this same hive, if made of knotty lumber, of the kind that Mr. Hutchinson describes, for 60 cents, and make the same

profit that he now makes on other hives. Now, in saying this, do not get the impression that the Root Co. would at the present time accept orders for hives at this price, of the kind described, *until after* we get through with our crowd of orders for high-grade hives. We are now behind 30 carloads, and shall be compelled to see to our regular trade first. The kind of hive that I spoke of in our list, listed at \$1.25 in lots of 100, is a $1\frac{1}{2}$ -story hive, and should not in any sense of the word be compared with a home made one-story affair made of inferior material at 51 cents.* If there is a demand for hives made of knotty lumber, at less price, and if we can be assured that customers will not complain, we can furnish them an accurately made hive at a price that will compete with the local mill. Even if a manufacturer does have overhead expenses, he is able to buy in hundred-car lots, and put out hives made by machinery that will turn out by the thousands in one day the quantity purchased and the quantity made.

To make a comparison at all equitable, it should be based on the same kind of lumber, the same kind of covers, and the same kind of frames throughout, with or without tin rabbets, and with or without followers. On that basis the manufacturers stand on about an even footing with the local planing-mill when we consider the difference in the workmanship.

A few years ago I went through a number of bee-yards where there were home-made hives in use. There was not a cover or bottom-board that fitted properly. The boards were roughly sawn, and checked and split. The factory-made frames would fit some hives and not others. I distinctly remember watching the owner of one of these yards as he stopped every little while and whittled off the ends of his top-bars in order to get the frames into the hive. I remember, too, something about the fearful accumulation of burr-combs, due to the mix-up in bee-spaces. They varied all the way from $\frac{1}{8}$ inch to $\frac{1}{2}$. How he wasted precious time in tearing loose his combs! and the robbers!—all because the hives were improperly made.

The average planing-mill has not the facilities; and even if it does, its proprietor does not understand the importance of extreme accuracy in the construction of hives; and where one might be able to save money he might waste valuable time right in the height of the season, when he could least afford it.

Now, do not let me be misunderstood, for I fear that already it may look as if I were trying to grind my own ax. Perhaps I am unconsciously biased; but I have tried to state the matter fairly, as I know Mr. H. has. Taking it all in all, Bro. Hutchinson and I do not differ materially when we figure on *exactly the same equipment*.

* It is fair to say that Mr. H. does not make this comparison but a careless reader taking his data is liable to do this without considering all the factors.



THE LA BOUNTY ONE-PROCESS WAX-EXTRACTOR.

By Three Separate Machines.

BY S. O. LA BOUNTY.

[The reader will get a much better idea of this article if he understands at the very outset that this process of wax rendering involves, first, a separate and distinct boiler or generator for steam, to stand on the stove; second, a wax-press located on a platform off from the stove, but having a steam-pipe connection to the boiler, and third a refining-chest connected to the last named. Although Mr. La Bounty does not say so, the idea of having a separate boiler is to get the wax-press down to a convenient working distance, and away from the hot stove.—Ed.]

The extractor consists of three principal parts; 1, The generator; 2, The wax-press; 3, The refining-chest.

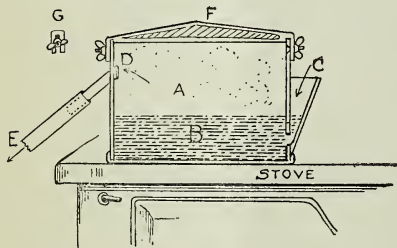


FIG. 1, THE GENERATOR.

In the generator, Fig. 1, B shows the water in the generator; C is the offset for pouring in water; D is the pipe connecting with the wax-press; E is a piece of asbestos hose connecting the pipe projection from the generator with that from the wax-press; F is the steam tight cover; G is the fastening for holding on the cover.

In the wax-press, Fig. 2, A is the body of the press; B is the comb-basket; C is the follower; D is the plain part of the plunger-rod; E is the part of the plunger-rod having a thread cut on it; F is the handle-bars; G is the steam-tight cover; H is the part of the cover through which the plunger-rod passes; I is an escape for letting off the steam before putting on pressure; J J are the fastenings for holding on the cover; K is a projection or trough soldered on all around the inside of the press, in which water is placed. The upper part of the comb-basket turns outward and downward into this water, thus preventing the steam from passing downward outside of the basket, and compelling it all to pass downward through the comb. L is the comb in the basket; M is the part of the comb-basket which is perforated. The upper

half is not perforated, as it is not necessary; and the comb will melt more quickly if the steam has to pass downward through it before it escapes. N is the pipe leading to the refining-chest; O is the pipe connecting with the generator. The plunger rod has a thread cut on the upper half. The lower half of it is plain. When the comb is first melted it can be easily pressed down half the depth of the plunger-rod by a simple pressure on the handle-bars, and then screwed the rest of the way. This is done much more quickly than if there were a thread the whole length of the plunger-rod.

In the refining-chest, Fig. 3, A is the body of the chest; B is the steam-tight cover; C is the fastening of the cover; D is the receiving wax-dish having handles by which it may be lifted out, and a lip for pouring the wax out into other dishes for cooling; E is the compartment in which the wax strains and purifies when it comes from the press; F is the hot wax, and G the water on which it floats; H is a strainer through which it strains as it comes from the press; I is an observation-glass in the side of the chest, so that we may at any time see the height of the water in the chest; J is a stop-cock for letting off water, as it will be constantly condensing, and some will occasionally have to be drawn off; K is the exhaust-pipe through which all steam should pass; L is a dish to receive the drip from condensing steam.

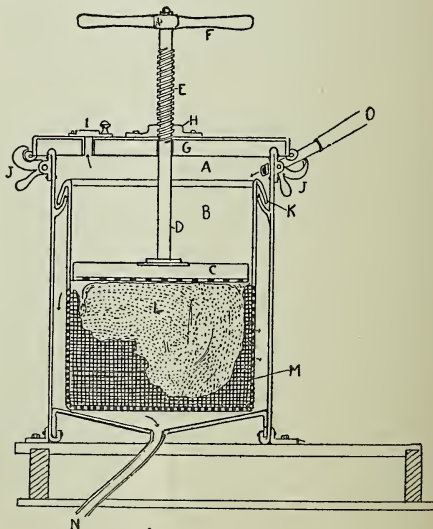


FIG. 2, THE WAX-PRESS.

The refining-chest should be high enough from the floor only to admit of putting the dish to catch the drip. The press rests on a box or platform near the stove, and should be as low as possible, but high enough to allow of a slant to the pipe which connects it with the refining-chest.

What are the advantages of this press? Rapidity, safety, and facility of operation.

The refining-chest may be used as an attachment to any wax-press or extractor by making the cover steam-tight; and the extra pressure given to the steam thereby will cause the wax to melt much more rapidly, besides doing away with the dangerous operation of remelting the wax.

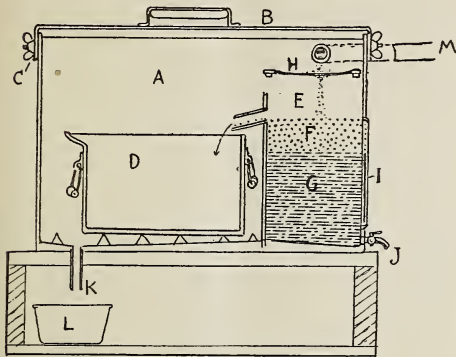


FIG. 3, THE REFINING-CHEST.

The press being fastened to a small platform or box which rests on the floor near the stove the operator can apply the pressure much more easily than he can to a press resting loosely on a stove, and where the handle bars will be at least five feet high when raised to their greatest height. The hot wax, instead of being on the stove-pan, where children are liable to tip it over and scald themselves, is in an enclosed chest. Instead of having to remelt the wax, it is all done at one operation. There is a constant pressure on the combs in the basket by the live steam, as it can not pass downward excepting through the combs. The steam, having so far to descend before making its exit, is under pretty high pressure, and will melt the comb more thoroughly and quickly than an extractor which stands on the stove, and from which the hottest steam passes through the pipe through which the wax runs. Lastly, the pressure is applied right in live steam. You will get every dram of wax. There will be no drip over the floor in transferring from the stove to a cold press, nor chilling when the pressure is not applied quickly enough.

Should the steam issue around the plunger-rod, a wet cloth may be wound around it next to the cover, which will effectually prevent it from coming out.

[If I mistake not, this general plan has not been carried out in its entirety by Mr. La Bounty. It is somewhat of a question whether enough live steam could be generated in so small and simple a boiler as is shown in the illustration, sufficient to force a pressure of hot steam into the wax-press and from there through the perforated metal basket into the refining-chest. It is my

opinion, having had a great deal to do with the generation of steam, that a much more elaborate boiler would have to be provided. It would require a larger surface to the stove than is here shown. If any pressure were generated at all it would be quite liable to force the water out of the offset at C, as shown in Fig. 1; and it is questionable whether the steam could be forced from such a generator through the perforated metal in the basket at M, in Fig. 2; for it is understood, of course, that the trough at K is filled with water, and hence the steam must work its way through the mass of wax, which it may or may not do, depending on the pressure that is applied.

I learned from my own experience that there are a good many things on paper in connection with this matter of wax-presses and wax-rendering that had to be greatly modified after an extended and repeated test; and there are some things in connection with this method that will not work out as is here stated. However, a more elaborate boiler—something that would cost as much as the wax-press itself—would cause the steam to flow downward and cause a pressure in the wax-press. But there could be no offset at C in the boiler, for the water would be all forced out; in other words, it would boil over.*

So much by way of criticism. I trust the reader will not feel that I condemn all of Mr. La Bounty's ideas. He has suggested some good ones. First, it would be convenient to have the wax press off from the stove at a convenient height from the floor; and this could be done by having a boiler of the right design and of sufficient capacity. I believe the refining chest would be a good thing, for it is desirable to have the wax handled all at one heat, to save discoloration. Repeated tests have shown us conclusively that every time wax is heated it is darkened very slightly.

There is another feature that may or may not have merit; and that is, having the threads cut off from the screw from the point to about half its length. We use in our wax presses a double-lead thread by which one turn moves the screw down $\frac{1}{4}$ inch, and it is my candied opinion that one could turn this down quicker than he could get the threads into the mesh at H, Fig. 2. By the by, the lug H should be on the *under* side of the cross-arm, to stand the strain of the pressure. Whether this is a mistake of the artist or of Mr. La Bounty I can not say.

Taking it all in all, I question very much whether the average person would be willing to go to the expense of a generator, to

* Right here, perhaps, it would be proper to explain. Water pressure is in direct ratio to its height in a tank or standpipe. Roughly speaking, an elevation of two feet of water would give a pressure of about one pound per square inch. To generate sufficient pressure to force the steam up through the thread, as spoken of in Fig. 2, so that it would be necessary to confine it with a wet rag as explained in the last paragraph of the article it would require a water elevation of at least two feet at C, Fig. 1, when, in fact, there is supposed to be only about two inches.

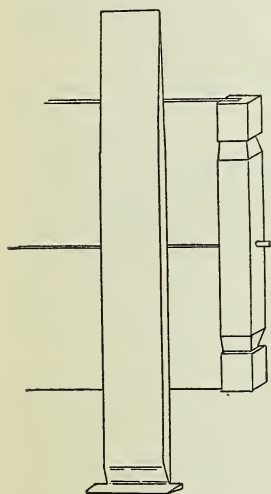
cost nearly as much as the wax-press itself. By making steam in the wax-press, so that it can rise up gradually through the mass, it is not necessary to have pressure or an elaborate boiler. Till the pressure goes up five or ten pounds there is but very little increase in the heat of steam over mere vapor. I have had considerable experience in steam heat, and know this is one of the principles that have been laid down by those well up in the art; so I question whether very much will be gained by a separate generator except in the matter of convenience.—ED.]

A COUPLE OF SUGGESTIONS.

An Excellent Metal-spaced Hoffman Frame; a Hive-tool.

BY L. R. FERGUSON.

I send a sketch and description of a hive-tool which I find very useful and convenient, fulfilling the requirements in more ways than any other tool I ever used.



THE FERGUSON HIVE-TOOL.

The one I use is $1\frac{1}{8}$ inches wide and 12 inches long, and is made from an old flat file; but part of a leaf from an old buggy or wagon seat spring would answer very well, and require less forging to draw out the thin end.

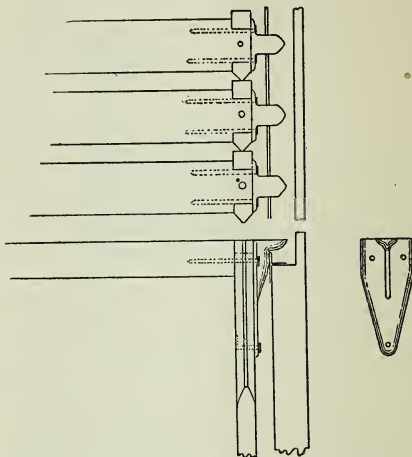
The thin or chisel end being so wide, it will separate the hive parts without bruising them, as in the use of a screwdriver; and the extra length and strength enables one to reach any part of the hive to clean or scrape off burr-combs or bits of propolis, tighten up bottoms of frames (Danz.), loosen the division board, loosen bottoms and covers, etc., to much better advantage than with a shorter or more flexible tool.

When the end-bars of the division-boards are notched all around, about an inch from the end, as shown in the cut, no matter which side up they are inserted, the hook will easily catch in either the back side or end notches; but care should be taken not to notch so deep as to weaken the end-bars too much.

I should also like to submit for your criticism a plan for a cast-metal frame-hanger

and end-spacer combined, which strengthens the cover of the frame and reduces the point of contact with the hive to the minimum.

In nailing up the frame, one nail should be driven down through the top bar into the end-bar to hold the parts in place, when two long barbed or cement coated nails driven through the hanger and end-bar into the



FERGUSON'S METAL-PROJECTION HOFFMAN FRAME.

top-bar, and one short nail through the hanger at the lower end, and clinched inside the end-bar, would make a fastening twice as strong as the ordinary top-bar projection.

But their principal merit would be in the fact they are so narrow that there is plenty of room between them for the thumb and finger, and the shape is such as to give a firm hold, thus making the handling of frames much more easy and rapid.

For use on the loose unspaced frame, the chances for propolizing are so small that no tool would ever be needed to loosen them; and by slightly denting or notching the tin rabbet at regular distances, so the hanger would catch in these notches when slid along the tins, these frames would become perfectly self-spacing; but care should be taken not to make these notches so deep as to interfere seriously with sliding the frames from side to side of the hive.

The outer ends of these hangers being pointed when a frame is stood on end to give the operator the free use of one hand, the point will enter the cover, or whatever the frame stands on, enough to prevent any slipping off and breaking out the combs.

The use of this hanger would not interfere with the standard goods in any way except in the one item of length of top bar; and even this could be sawed off from those already in use, and the iron nailed on, thus making useful many old frames with one ear broken off, or loose top bars, and these could then be used with the regular goods.

In repairing old frames it would be better to use a small screw in place of the small nail at the bottom when the latter could not be clinched tight on account of combs in the frames. This over fastening so far down on the end-bar is where the extra strength would be obtained.

Harvey, Ill.

[Your hive-tool is quite similar to others that have been shown in our columns from time to time.

Your cast-metal frame-hanger I consider to be something of more than ordinary merit. Indeed, I am not sure but that it is the *best* metal spacer that has been so far suggested. I respectfully call Dr. Miller's attention to it as being something in the line of a Hoffman frame that can not be propolized to an extent as to render it difficult to handle. It can be applied to any frame in use (Hoffman or unspaced L.) by cutting off the top bar projections as you suggest. It could also be used with the regular Hoffman frames interchangeably. Perhaps a trial of the frame might change my good opinion of it.—Ed.]

FUMIGATING COMBS.

Long-tongued Bees in Germany; a Swarm in the Open Air.

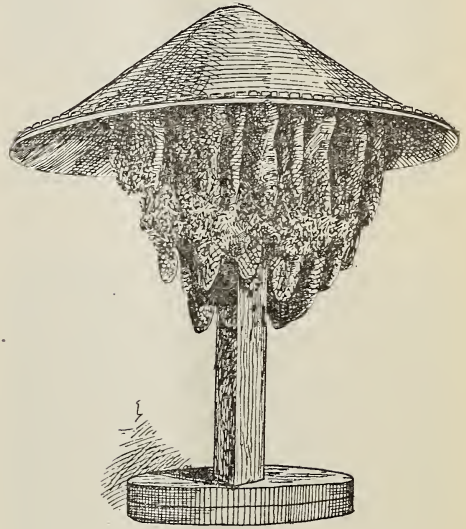
BY F. GREINER.

Bisulphide of carbon has long been used by the American people for the destruction of vermin of various character. Bee keepers have employed it to kill wax-moth and their brood, thus protecting combs and comb honey. As it is used here, the chemical is allowed to evaporate, which process produces an explosive gas. I have not dared to make use of it inside of buildings. Dr. Brunnich makes use of the sulphide of carbon in a different way. He says in *Schweiz. Bienenzeitung*: "Sulphide of carbon is a liquid which burns easily, and produces sulphur fumes, as it can not be accomplished by burning sulphur. The liquid burns slowly with a small flame, producing little danger of damaging the combs hanging directly over the burning liquid, which leaves no residue. Any one having used this chemical will never go back to *burning* sulphur."

A bee-keeping brother across the water is very much enthused over the long-tongued yellow queens from America. He says in *Bienen Vater*, "After reading so much about the redskins I made up my mind to send for the wonder. The cost, I cared little about; it was to be a test case. Well, the queen came directly from America, a splendid animal. Never in my life had I seen so large and beautiful a queen. After some difficulty she was safely introduced. During the first few days she laid but few eggs; but after a few weeks' time she began to do business. I was delighted to find the brood-combs in due time look like solid

boards, not a cell being skipped. Soon young bees began to emerge. They were slightly lighter in color than the queen, and beautiful to behold. According to the American method I reared 19 fine large queen-cells, which nearly all produced very fine queens.

Bienen Vater, Austria, brings an interesting description and picture of a swarm of bees with comb structure built under a sort of cover, but not protected by hive-walls. The picture was taken during the first year of its existence. It has been win-



AN OPEN-AIR HIVE.

tered through several seasons by being protected by a large rough box being set over the whole. The owner, Herr Simmich, says, "I have made some interesting observation with my free hanging swarm. It has been surprising to me to see what a small cluster the quite populous colony had contracted to during the colder days, with the thermometer down to 26°. Bending the combs carefully apart at this time one could easily satisfy himself of a fact which is still doubted by some; viz., that bees in winter will occupy every empty cell inside the cluster. I also observed that bees are constantly in motion, those from the periphery changing to the inside.

Naples, N. Y.

[I notice that you use the terms "bisulphide of carbon" and "sulphide of carbon." From the fact that you refer to Dr. Brunnich in connection with the sulphide of carbon, one is almost led to believe there is a distinction between the two. I am informed by one of our druggists that bisulphide, disulphide, and sulphide of carbon are all synonymous; but that the last-mentioned name is almost gone out of use. But I never detected any sulphur fumes with bi-

sulphide of carbon. The odor was quite different; and this leads me to believe that you and Dr. Brunnich are possibly referring to another chemical.

I have wondered if it would not be an interesting experiment for several of us to make an open-air hive, something like the one shown in the illustration. It would probably be necessary to fasten in some combs, then put an inclosure around it until the bees had got the combs well filled with brood and honey; then remove the inclosure, and use the hive as an exhibit or curiosity to show to visitors. It goes without saying, that the colony should be powerful, or at least able to make a strong defense against robbers during a dearth of honey. Such an exhibit would be very interesting at a bee show or fair.—ED.]

EASTERN HONEY IN PAPER BAGS.

The Importance of Well-ripened Honey for Candy-making; a Valuable Article.

BY J. A. GREEN.

Dr. Miller wonders if the Coloradoans have a monopoly of the paper-bag package, and expresses the opinion that other kinds of honey than alfalfa might not work in paper bags—at least not without draining—while the editor is of the opinion that Eastern honey should be fully drained before it is put into bags. If it were not that I have so frequently come across such expressions in regard to honey produced in the middle and eastern States, I would almost want to rub my eyes and wonder if I am dreaming when I imagine that I once produced honey in the East. Why, Dr. M. and E. R., back in dear old Illinois, not so very many miles from Marengo, I have produced tons of honey from which, when fully candied, you could hardly any easier have drained any liquid, without melting it, than you could from a newly burned brick! I have also bought Wisconsin honey that was almost as hard and dry as any alfalfa honey. Furthermore, fifteen years or so ago, when I lived at Dayton, Ill., and wrote for GLEANINGS somewhat oftener than of late years, I put up honey in paper myself—not in bags. I did not get quite that far. Still, it was in paper, and it worked all right.

Although I had sold a great deal of candied honey in pails and various other small packages, I had never found any way in which any quantity of candied honey in small packages could be disposed of without personal solicitation. As I studied over various schemes for remedying this condition of affairs I was impressed with the immense quantities of sweets that were consumed in the shape of confectionery. I reasoned that, if we could only put up honey so that it could be sold and eaten like a caramel, for instance, a new market for enormous quantities of honey could be secured.

By folding little squares of paper about a form, I made me a number of little boxes

of various sizes, from an inch square to some holding a pound of honey. These little boxes, square or oblong, were set closely together in a shallow tray, to make them keep their shape; honey was poured in, and they were set away to harden, after which the edges of the paper were folded over the top. In some respects the results were very satisfactory. I had neat square packages of dry hard honey that kept in perfect condition until the heat of summer. But I decided it was too much labor for the busy beekeeper to undertake. Commercially, the manufacture of a candy that required days, or possibly weeks, to harden, instead of minutes or hours, and that could be made only at certain seasons of the year, would require too much in the way of space and fixtures to be profitable.

My larger packages were intended to be sold for table use, but my experience in that line had been so discouraging that I did not grasp the possibilities of the situation as Aikin did, but dropped them along with the rest, and relegated the whole to the limbo of many another of my brilliant schemes.

The point I wish to make is that the honey of Illinois, and probably that of most of the other States, if of good quality, and properly handled, is nearly as well adapted to use in a paper package as that of Colorado.

There are two points that should be observed. First, the honey must be thoroughly ripened—not that which has been extracted when only a third or a half of the cells were sealed, but that in which every cell has been sealed; and it is all the better if it has been allowed to remain on the hives or in a very warm place for several weeks after this. I think nothing has done so much to discourage the use of extracted honey as the marketing of an article of considerable proportion of which is thin, raw, and unripened. Such honey will not candy perfectly.

The second important point is that the honey should never be put into the final receptacle before it has begun to granulate. Leave it in your honey-tank or other large receptacle until it begins to granulate, then stir thoroughly and draw off into the small packages. The stirring changes the mode of crystallization so that honey that would granulate with coarse crystals, with more or less liquid between, granulates with a fine grain, hard and dry. Besides this, it will be considerably lighter in color. Simply waiting until the honey begins to grain, then drawing it off, will usually suffice, but the stirring is much more effectual.

Instead of the waxed paper sacks that have been thought necessary, I would use those of ordinary paper, and, if desirable, in order to make a more sightly package, or avoid any chance stickiness, put another wrapper of paper around it. A very annoying feature of the waxed sacks that have been sent out is that almost all of them will leak; whereas the ordinary paper sack,

even those of light weight, will usually hold honey perfectly.

Grand Junction, Colo.

[Yes, I remember when you were working and experimenting with extracted honey; and I recall, too, some paper packages that you sent us for inspection. At the time, we (father and I) considered them a great acquisition, and we thought they would make quite a furore in the bee-keeping world; but perhaps, as is the case with so many other things, the times were not then ripe for it, and it had to go over till the present.

We have put up candied honey ourselves that was as dry and hard as any Colorado product I ever saw; but, nevertheless, it is a fact that a good deal of the honey in the East is not solidified entirely. An examination of the bottled honey on the grocery shelves will show this. Then it is true that Eastern honey does not have quite the tendency to granulate as does the ordinary alfalfa honey of Colorado; and it should, therefore, be handled with some degree of caution.

We have been putting up candied honey in paper very successfully during the past month; but we find it better to allow the honey to granulate in a large can so it is about as thick as soft mush, but not so stiff that it will not run out of a large gate into paper bags. It is allowed to stand in a cold place for about two weeks, when it will be nearly as hard as a brick. We have lots of candied honey put up in Aikin paper bags on our shelves, that look as perfect and nice as any put up by friend Aikin himself.

The two points that you emphasize, of having well-ripened honey, and then having it partially candied before being finally put up in receptacles, are very, very important. The same things are emphasized in the symposium in our last issue.

By the way, friend Green, I wish you would let your light shine as it once did in years gone by. I am sure you are constantly picking up new ideas, and the bee-keeping world would greatly appreciate it if you would write as you used to do when you held forth in Illinois. I used to count J. A. Green, when I took editorial charge of this journal, as long ago as 1885, as one of the reliable standard writers. I used to put him on a level with Dr. Miller, G. M. Doolittle, and others I might name. I would like to put him in the same honorable crowd now if he would favor us with his presence, even if only on paper. I am sure that a dry climate like that of Colorado can not have dried up all his ideas.—Ed.]

BAGS FOR CANDIED HONEY "A GRAND SUCCESS;" EASTERN HONEY ENTIRELY SUITED FOR THE PURPOSE.

For years we have been putting up extracted honey mainly in glass in summer—pint and quart Mason jars (sometimes with a piece of comb in also), and in fall and

winter we used three, five, and ten pound lard-pails painted in various bright colors, and stenciled. The honey here nearly always candies; and when it candied, we generally sold most of it that way, pinning on the handle of each bucket one of your honey-leaflets, with price and kind of honey written on it, and also sticking on one of your little "Take Notice" tickets, telling how to liquefy the honey.

But the pails did not just suit us for candied honey. We wanted something that would mold the honey into a good shape, and when we first read of the bags we said they were just what we had been wishing for; so we sent to you for a lot of them, and they are a grand success. People who like candied honey say they are the nicest thing they ever saw; "like it better than comb honey;" "didn't know candied honey was so good," and many are learning to use it that way who never used it before.

One lady in the South, who has honey that does not candy, to whom I sent some of the small bags, says, "The honey is superb; esthetic sweetness; beautiful to the eye, the touch, and the palate; better than the best cream candy."

The smaller sacks are used whole on the table. The larger ones people slice right off through the paper, and then peel only the slice, so the rest keeps nicely in the sack. This winter we sell liquid honey only in buckets and cans, and candied honey by the sackful, and we don't know whether there is any one else now living who can invent nicer packages for extracted honey. But our honey candies perfectly dry and hard—not a drop of liquid, sticky, inferior portion to it, and so it doesn't need any draining or refining or purifying; and if we heat it no scum will rise. We make the bees do all that work, and ripen it up to 12 lbs. to the gallon. Our ripest and thickest honey always candies first; and this year we had to hurry to get it into the sacks before it should get too thick to run; and by Oct 22 we had honey by the sackful on the market. MRS. M. A. SHEPARD.

Barry, Ills.

[This emphasizes the point made by Mr. Green, that the honey must be thoroughly ripened. We should be glad to hear from others who have used the bags.—Ed.]

HONEY THAT DIDN'T CANDY IN A ZERO TEMPERATURE.

While liquefying honey this winter out of sixty-pound cans to put up in small packages, two cans were neglected and left out in a woodshed where the temperature ran 10 below zero. One can of the first extracting and one of the last, to my surprise, were not the least bit candied, while all that were kept in a warm room were candied. Then I divided both cans, putting half in a warm room and the rest back in the cold. What I put in the warm room soon candied, while that left out in the zero tem-

perature remained liquid. As this is so contrary to the teachings, I thought I would mention it.

J. F. ORISHAW.

Hastings, Ont., Jan. 25.

[Why, friend O., this is certainly contrary to all my experience. I should have said what you kept in a warm room might candy or it might not; but that exposed to a zero temperature I should have felt sure would candy hard and solid. Has anybody else had a similar experience?—A. I. R.]

LANGSTROTH'S INVENTION OF THE BEE-SPACED MOVABLE FRAME.

His Claims of Priority Well Established; the Cruel Persecution that was Waged Against him Years Ago.

BY H. J. O. WALKER.

Mr. Root:—I subscribe to GLEANINGS through the *British Bee Journal*, and I am now trying to obtain a little information from you. Kindly read the following extract, translated from "Nouveau Manuel complet du Propriétaire d'Abeille, etc.," by A. Martin. Paris, 1828.

BLAKE'S HIVE.

This hive is used with much success in America. It consists of a square box, of which the upper part is a hinged cover. At about two-thirds of the height of the box is a horizontal partition formed of small bars only three lines ($\frac{3}{4}$ inch) apart. On this partition are placed rectangular bottomless boxes, shaped like a drawer, in sufficient number to fill all the space above it. The cover is then shut down. To take honey, the boxes are removed by means of rings attached to their upper face, when fresh boxes can be substituted.

Buzairies, in his "Hives Ancient and Modern," Par's, 1863, page 40, inserts the above extract from Martin, introducing it as follows: "To find the first example of a frame hive with two stories, we must seek it in the New World. Blake appears to have been its inventor." He gives in illustration a sketch of a hive, apparently drawn to suit Martin's description. Martin gave no illustration.

The substance of the above quotation from Martin also appeared in Italian in the Florence *Journal of Science* in 1825.

I want you to be kind enough to inform me from your own knowledge, or from those who ought to know, whether there was any published authority on your side of the Atlantic; and, if so, what, for this description of Blake's partition super hive? You are well aware how, when the validity of Langstroth's patent was in question, any thing previously in use in the nature of a frame hive, such as those of Prokopovitch, Munn, etc., was freely discussed; but I have sought in vain for any mention of Blake in the journals of the period. I am unwilling to believe that Martin was drawing on his imagination. Will you, then, help me in this matter in which I am particularly interested? I can think of no one else so likely to be able to do so.

Leeford, Eng., Dec. 12.

[We have copies of all the patents that have been issued on any thing pertaining to bee culture in the United States. No American patent touching the subject of hives or bee culture in general was issued before 1831; and it is surprising how large a number were introduced during that year, indicating that there might have been a general awakening about that time. But Mr. Blake's name does not appear among these early applicants.]

I have recently been over the subject in the old volumes of the *American Bee Journal*, reading with considerable interest (and disgust) the cruel controversy that arose during the late 60's and early 70's over the validity of the Langstroth patent covering the use of movable frames, and assailing Langstroth's personal honor and integrity as well. His opponents searched the world over for some scrap of a description antedating the principles set forth in the original Langstroth patent. While they referred freely to Munn, Prokopovitch, Berlepsch, Dzierzyn, and Debeauvoys, and perhaps half a dozen others, no mention, so far as I am aware, was made of this man Blake.

From the meager description you have furnished, there is no evidence to show that he in any wise anticipated the Langstroth patent; for it must be understood that Mr. Langstroth did not claim to invent movable frames; but he did claim to invent the first *practical* frame for handling bees. His patent covered the principle of a bee-space around the frame, top, sides, and bottom, and a bee-space between the frames, the same supported by a projection or a continuation of the top-bar in such a way that any one of them could be removed without tearing or breaking loose the propolis connections between the hive and frame except at the small point of contact in the rabbet where the frame was supported.

In later years, I think about 1886 or '7, the late Charles Dadant went over this whole ground again. No man was better posted on this subject than he, for he was contemporary with Langstroth and all the early writers when this subject came up in the early days. After a full and thorough investigation based on new developments he gave it as his opinion that no one had anticipated Langstroth in his invention of a bee-spaced movable frame. This opinion is concurred in, I believe, now by all the best writers in Europe, prominent among whom may be named Thomas W. Cowan, editor of the *British Bee Journal*, who probably has a larger library relating to bees than any other person in the world. In this connection I might remark that we have here at our own office a very complete library of old bee books, some of them so old that they go clear back to the time of the first printed translation of the Bible in English. In not one of these old volumes is there mention made of a frame that embodied the principle of the original Langstroth frame patented in 1852.

It is one of the *burning shames* that so

good a man as father Langstroth should have had hurled at him the abuse and calumny that was heaped on him by the early apicultural writers from 1868 to 1872. But now that the smoke of battle has cleared away, calm judgment without prejudice has shown that Langstroth was not anticipated; and the whole apicultural world is glad to do honor to the man who made the first great invention to simplify hive manipulation and to make possible the immense progress that has been made in these latter days.—Ed]

WHAT KIND OF FOOD TO GIVE COLONIES SHORT OF STORES.

Some Interesting Experiments Showing Candied Honey to be the Best Winter Food.

BY JOHN FIXTER.

Owing to the past unfavorable season for honey-gathering in the Ottawa Valley, many letters have been received from people who have only a few colonies of bees, stating that, when carrying their bees into winter quarters, they had discovered there did not seem to be a sufficient store of honey in the hive to carry the bees through the winter. To gain information as to the best method of overcoming this difficulty the following experiment was tried with six strong colonies of bees.

Four frames of sealed honey were taken from each of the six colonies, leaving the cluster on the four remaining frames. The four frames were left in the center of the hive with a division-board at each side, and some light packing was placed between the division-boards and the sides of the hive. The wooden covers were removed, and a large propolis quilt made of heavy canvas was placed over the top of each hive. Over the top of the propolis quilt extra packing was placed to keep in the heat, absorb moisture, and prevent drafts or upward ventilation. The bottom-boards were left on as they came from the bee-yard, leaving the entrances wide open.

The experiment was as follows:

1. Two colonies received maple sugar of the best quality.
2. Two colonies received candied honey and sugar.
3. Two colonies received partly filled sections of honey.

Each colony when put on this test weighed 31 pounds, and each was given 5 pounds of its particular food to start with. The experiment lasted from November 18, 1902, to March 22, 1903.

The two colonies fed on maple sugar consumed 11½ pounds each. They were examined every two weeks, and water added to the sugar through holes in the tops of the cakes, keeping it soft and moist.

The two colonies fed on partly filled sections of honey consumed during the same time 14¾ pounds each. There was, for several reasons, considerable waste in this

test; and if partly filled sections could be sold even at a reduced price it would be advisable to do so instead of feeding back.

The two colonies that were given candied honey consumed 10¾ pounds each. The candied honey was moistened at intervals, which made it easier for the bees to suck up.

Candied honey is made as follows: Take good thick clover honey and heat (not boil) it until it becomes very thin; then stir in fine granulated sugar. After stirring in all the sugar the honey will absorb, take it out of the utensil in which it has been mixed, and thoroughly knead it with the hands. The kneading makes it more pliable and soft, so that it absorbs (or, rather, takes up) more sugar. The kneading operation, with the adding of fine sugar, should be continued until the dough is so stiff as to be quite hard to work. It should then be allowed to stand for a day or two; and if at the end of that time it is so soft as to run or to be sticky, a little more sugar should be kneaded in. It should be cut into convenient-sized cakes, and placed on top of the frames in such a way that the bees can get at it easily.

The colonies in all three tests came through in excellent condition. Any one of the three methods may be safely followed; but I would strongly recommend examining and weighing all bees the first week in September. At that time every colony should have a good laying queen, and should weigh over 50 pounds. In seasons when there is no fall flow of honey, all colonies in Langstroth hives weighing less than 50 pounds in September should be fed up to that weight at least.

The best method for getting colonies up to the required weight is, when extracting, to save several full well-sealed combs, then remove some of the light ones out of the hives and replace them with the heavier full frames. If no honey is available, feed sugar syrup. This latter plan is a rather tedious one, and great care must be taken not to daub the hives or appliances, as robbing at this season of the year is very easily started, and very hard to stop.

Sugar syrup may be made as follows: Use the best grade of granulated sugar, two parts to one of water, by weight. The water should first be brought to a boil, then the pan or vessel set back on the stove so that the boiling will not continue, but the water be kept sufficiently hot to dissolve all the sugar.

The sugar should be poured in slowly, and thoroughly stirred until all is dissolved. The syrup should then be fed in a lukewarm condition.

Experimental Farm, Ottawa, Can.

[These experiments are interesting and valuable, more especially as they confirm the result of similar experiments made by others.

It would have been interesting to know what the consumption of stores would have

been in the case of a colony fed on pure sugar syrup. It is my opinion that the loss would have been less than any of the other foods above described. The idea of using candied honey as a winter food is a good one. When one is short of combs of sealed stores this will make an excellent substitute.—Ed.]

The Fast Time (an' the Last).

[While on a recent visit at Medina, artist Murray took an automobile ride with A. I. R. around town, and finally down to our cemetery. In one of his private letters he sent us a sketch and a few lines of verse describing his sensations while on this ride. For the benefit of our readers we reproduce the whole here.—Ed.]

ARTIST MURRAY'S SENSATIONS WHEN RIDING IN THE AUTOMOBILE WITH A. I. R.

Whew! Yer feel sorter dizzy round the legs,
When autoing first takes hold,
An' kinder shivery down the spine
With spells of hot an' cold.
Yer feel the feathers on yer back
Puff up an' move about—
Yer "confidence" has taken wings,
An' yer innards all turned out.

Things seem allfired on e-knee,
An' yer swallow mighty fast,
Fur yer don't know how things 'll end,
Nor how long the spell will last.
As yer bounce 'tween heav'n an' earth,
Yer feel quite serious round the gills,
And things go twistinizing by,
Each one in fancy frills.

Land sakes! why was I ever coaxed
Into th' ternal pesky thing?
Thar ain't a blessed thing ter grab
'Cept that chaffer with his grin.
No doubt he thinks it's awf' fun
Ter jerk the thing about;
But I tell yer, yer feel quite odd
When half way in an' half way out.

Gimminy crout! Mr. Chaffer,
Don't yer see that pond ahead?
Monumen s ain't of interest,
Nor tales where heroes bled!
Great Scott! Just let me outen this—
It's no place here for me—
An' I'll put up a pater-nostrum,
An' howl aloud in glee.

I ain't hank'ring now to fly
By the Darius or Langley waw;
Jes' let me feel my feet on ground,
An' there, by gum, I'll stay.
Bet you'll have to take a derrick
To get me on again
To sit bes de that chaffer bold,
Jes' to have a leetle spin!

Cleveland, O.

R. V. MURRAY.



WHAT IS BEE-POISON?

Regarding bee-poison, I inclose a copy of the paragraph I was looking for when we were discussing the topic. It was in another book after all—one that I had recently been reading.

By the way, the book from which the extract was made is particularly interesting. It is entitled, "The Cambridge Natural History." ARTHUR C. MILLER.

Providence, R. I.

According to Carlet, the poison of the bee is formed by the mixture of the secretion of two glands, one of which is acid and the other alkaline; it is very deadly in its effects on other insects. We shall see, however, that the fossorial hymenoptera, which catch and sting living prey for their young, frequently do not kill but only stupefy it, and Carlet states that in this group the alkaline gland is absent or atrophied, so that the poison consists only of the acid; it is thus, he thinks, deprived of its lethal power. Moreover, in the fossoria the needles are destitute of barbs, so that the sting does not remain in the wound. Bordas, however, states that in all the numerous hymenoptera he has examined, both acid and alkaline glands exist, but exhibit considerable differences of form in the various groups. He gives no explanation of the variety of effects of the poison of different aculeata.

[I will explain that Mr. Miller and I met recently in Boston, at the place of business of Mr. F. H. Farmer. We were discussing the nature of bee-poison, when Mr. Miller said he had just been reading something bearing on that very question, and would send me the reference later, and here it is.—Ed.]

OBJECTIONS TO FENCES; BUT PLAIN SECTIONS FAVORED.

To produce our crop in the very best way many things have to be considered that even old timers have not thoroughly mastered.

The first step for the next year is taken when you order your sections, and bee keepers are not at all agreed which is best. I had about all kinds the past season, as I ran short and had to use what I could get; and such a conglomeration I hope never to have again. Now, while scraping and crating the honey I did a whole lot of thinking. I have used the four-piece $4\frac{1}{4}$ sections for many years, and, notwithstanding the higher cost, I still prefer them. The same-sized one piece plain sections, however, run them a very close second. Indeed, the latter have some advantages that may induce me to adopt them exclusively. One reason is that they take less space in the shipping-cases. Then, too, they cost less, and can be put together more quickly.



As to separators, my conclusions do not favor the fences. I have used these quite extensively; but with me there is too much trouble with brace-comb; also, in a few years the bees will gnaw the strips and thus leave the combs ribbed. I do not think I am mistaken as to the greater liability of the bees attaching more combs to the fences than to plain smooth wood separators; and I notice that the trouble is worse when the tall sections are used. I now use the plain wood separators with the strips glued on, as on fences, as I can see no use for the spaces between strips any way. Many years ago Betsinger tried to introduce a wire-cloth separator of $\frac{1}{4}$ -inch mesh, and what a failure it was! Not only did the bees attach lots of burr-comb to it, but I actually had them use these separators for the middle of the comb, probably mistaking them for some new fangled kind of foundation. I trust that I shall not interfere with the Rott Co. in the sale of fence separators; but we all want to know the facts in the case, and it will be just as easy to make a solid board separator as so many strips.

The prospect for a good honey harvest in 1904 is so far all that can be desired, and much vexation and hurry can be saved by preparing every thing possible for it now.

Milan, Ill. C. H. DIBBERN.

[We want the truth, cut where it may. Let us have reports.—ED.]

WHY THE BEES DON'T PAY ON THE COAST AT SAN FRANCISCO, CAL.

I was about to start with a hive or two in connection with my chicken-ranch; but a few years ago a man started here and gave it a good trial, and for some reason or other he gave it up. He went then and started somewhere about six miles from Los Angeles, and is now doing well with the bees. Before he left here he got some experienced bee-men to come to his place to see if they could find out why the bees would not work. He had also to feed them with sugar in the winter or else they would eat all the honey. These men could give no reason why the bees would not work, except that they might be too close to the salt water, this place being only about one mile from the sea.

There are also a great many fogs here, and perhaps that may have something to do with it. I have one of four hives which I got at Smith's cash store, San Francisco, and find that the frames are only half as deep as his, and that may also have a little to do with it.

J. LEWIN.

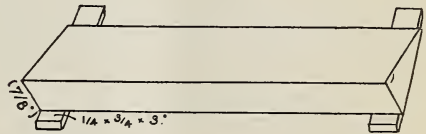
San Francisco, Cal.

[The seasons vary in California, and in southern portions of the State there are only about two good seasons out of five, so that some years the bees practically starve to death; in fact, thousands of colonies have died in the off years. The keeping of bees along the coast is not nearly so profitable

as a few miles inland. A mile or so from the shore, in the vicinity of San Francisco, is too cold, usually, to get good results. If you go inland about ten miles it will be warmer; but be sure to get into a territory where alfalfa is grown, or the bees might starve to death. You can, however, keep a few colonies in connection with your chickens, and get fairly good results; but the further you can get them from the cold winds of the ocean the better. The writer does not know of any extensive bee-keepers directly on the coast in the vicinity of San Francisco. As a rule you will find them a few miles inland, where it is warmer.—ED.]

ATWATER'S ENTRANCE-CONTRACTOR.

To-day, while looking at one of your bottom-boards with a deep entrance, I was wishing for some simple and cheap entrance-contractor and mouse guard, and, presto! I had the idea. I made one at once, and it



fills the bill. It does not need to be tacked in place, as its wedge shape allows it to be pressed into the entrance. It fits any depth of entrance, from $\frac{3}{8}$ to $1\frac{1}{8}$ inches deep, when made of $\frac{3}{8}$ lumber, and contracts them all to $\frac{1}{4} \times 9\frac{1}{2}$ inches, which is mouse-proof. If mice should ever gnaw them, which I doubt, coat with carbolineum, which is more than distasteful to mice, but no detriment to bees when it has dried thoroughly.

E. F. ATWATER.

Boise, Idaho.

[This is an excellent idea. Perhaps the supply manufacturers better furnish them to the general public. I have seen nothing any better for the purpose, or rather, I should say nearly so good. The fact it will fit any standard entrance in use, and hold its place, are two strong points in its favor.—ED.]

DEATH OF W. R. GRAHAM, OF TEXAS.

Nov. 27, 1903, W. R. Graham, of Greenville, Tex., passed away. He was one of the leading bee keepers of Texas, and has always, up to within a few months of his death, been willing and ready to assist bee-keepers in any way he could consistently. Mr. Graham was born in Jonesville, Va., Jan. 14, 1828. He professed religion in his nineteenth year. He was married to Miss Eietta Potet in 1851. He was the father of nine children, of which five survive him. He moved to Texas in 1874, settling in Greenville, where he has since lived. He organized the Texas State Bee-keepers' Association, and was its president for several years, when the late Dr. W. K. Marshall was elected president until death; and at the next meeting after Dr. Marshall died, Mr.

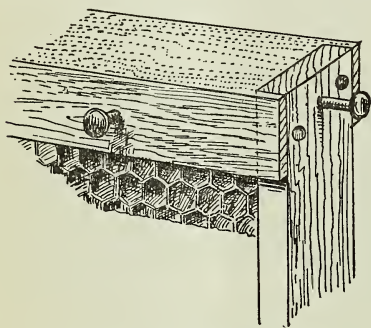
Graham was elected president for life. His occupation from childhood was bee-keeping; and after coming to Texas he also manufactured bee-keepers' supplies. He was always pleasant to all about him, and never seemed to tire of talking bees. He has often remarked to the writer that, when he had honey to sell, he was always able to rattle silver in his pockets. He managed bees by hundreds of colonies, and was always successful. His kind words and pleasant smiles will be greatly missed at the convention, and by those who lived around him.

A FRIEND.

CLEVELAND'S BEE-ESCAPE AND NAIL-SPACED BROOD-FRAME.

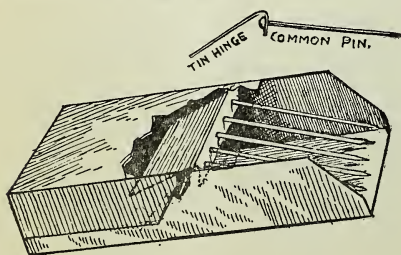
I am sending you a box containing a bee-escape, and also a corner of a brood-frame which I got up recently.

You will, of course, see the "points" of the brood-frame. It is "non-gumable," self spacing, and strong. The ends give better room for nailing than other frames; are stronger, and can not be put together with a "wind" in them. A starting hole should be made in the end-bar for the hang-



CLEVELAND'S BROOD-FRAME.

nail to prevent splitting, and insure accuracy. The head of the nail is to hang over the rabbit tin, and to do end spacing without staples. They are cheaper to make than the Hoffman, and stronger in construction than any I have seen.



CLEVELAND'S BEE-ESCAPE.

The escape I make myself, and have used it in my apiary two years, and like it better than any other. To operate, a stick to close a hive-opening is notched to take in the escape. The super is taken off and set

on an ordinary bottom-board, and a cover put on, and the escape applied to the entrance, when it may be set on top of the hive, or several supers may be piled up where convenient.

The advantages I find in it are, the bees are disturbed but once; no special bottom-board is required; several supers may be put in a pile, and the escape is on the outside, the natural place for the bee to go to get out. Practically it works to perfection.

Hinsdale, Ill.

R. D. CLEVELAND.

[This escape is, no doubt, a very good one; it is, however, old. The principle of it is practically the same as the one shown in our issue for May 15, 1891, page 430, but patented as far back as June 26, 1860. In our A B C of Bee Culture for 1891 we showed an escape making use of a row of pins pivoted to a common shaft, the same as is shown in the illustration below. This, Mr. Walter S. Pouder brought out in 1884; so it appears that this form of escape is the oldest known.

The objection urged at the time against this "flood-gate" principle was that the pin-points would become propolized down. The same objection would apply to the one here shown, in some localities and with some bees. When they become gummed up too badly they could be readily cleaned by immersing in hot water.

The brood-frame here shown embodies the well-known principle of frame support and of frame spacing. The correspondence in our office shows that quite a large number of people have been using this principle for many years. It has been illustrated in various forms for a number of years back.—ED.]

THE STARKEY COVER.

I noticed, on page 71, Mr. H. H. Root's description of Mr. E. E. Starkey's hive-cover. I should like to hear from Mr. Root as to how Mr. Starkey keeps bees from building in the same. Please give depth of cover.

W. H. RAGAN.

Thibodeaux, La., Jan. 23.

[This was referred to H. H. Root, who is attending school at the Northwestern University at Evanston, Ills. He answers as follows:]

Perhaps in the article referred to I did not make the description of the hive-cover sufficiently clear. It might be called a telescopic cover, three inches in depth, with the sides or walls of wood, and the top or roof of water-proof canvas. This canvas lies right on the tops of the frames. The bees can not get into the cover at all, for, no matter how much the frame warps or twists, the canvas will always lie flat upon the top of the hive.

H. H. ROOT.

CONSUMERS GETTING DISGUSTED WITH THE CHEAP CORN SYRUPS.

You spoke of cheap syrup on the market, Jan. 1. Why, the country stores are full of it here in Maine, under the name of corn syrup, golden drip, etc. But the stores that

I furnish with honey, are going out of it. I was in a store last summer where they had it in glass tumblers, with a small piece of comb in the middle, and labeled "white-clover honey." I told the grocer it wasn't honey—it was glucose. He said he knew it, and it didn't sell worth a cent. I sold him 28 lbs. of comb honey, and that was all sold before a week. The next time you come to Maine, make me a call.

N. Palermo, Me. G. F. TURNER.

[I made only a flying business trip up into your State, stopping only long enough to see Mr. J. B. Mason, of Mechanic Falls, and returning the same day. I thank you for your invitation, and will try to bear you in mind when next I go into your State.

Say, I should like to know whether it is true in other localities that consumers are getting tired of these cheap corn syrups. Some of them are positively vile. Let us hear from others.—ED.]

FINDING QUEENLESS HIVES BY THE "HUM" OF BEES AT THE ENTRANCE, ETC.

I began the season of 1903 with 14 colonies; and as they had done so badly the year before I had to feed nearly all winter; and when spring came they had to be fed. But I got them built up so they began to swarm about June 1, and I let them swarm.

I bought two swarms of a neighbor for 55 cents each, or 10 cents a pound, and furnished the hives; then I got three swarms in the woods, where I took up bee-trees by saving the brood combs, so when fall came I had 40 colonies and about 650 lbs. of comb honey.

In passing through the yard in the latter part of September I could tell by the hum of the bees which ones were queenless. I found that I had five queenless, so I set to work to give them queens; so when I was called to take up honey for my neighbors, and found a queen to suit me, I would just save her; and the bees take them home and run them in.

BUYING BEES IN THE FALL THAT NEED FEEDING UP.

I got the other day in a trade, nine boxes of bees, some in boxes of unnamable shapes, so that the nine gums of bees cost me, all together, only 75 cts., varying in weight from 33 to 83 lbs.; and with a little feeding they will all pull through.

Holden, Mo. GEO. H. WELLS.

[That is a good point, friend W., about finding queenless colonies by just looking and listening at the entrance. In visiting bee-keepers I have often pointed out colonies that were queenless by the action, and by listening, as you state. Any one can learn to do this pretty surely by practicing whenever he has a chance. A colony without a queen, and without brood, shows a lack of life and spirit, and the sound made by the bees seems to be a sad and mournful hum compared with the roar of a hive that is full of brood and wideawake young bees. It is

also true that, a great many times, one can find bees in old boxes, that need feeding for winter, where the whole outfit can be bought for a mere song. In my early years of bee culture I made it a point to buy out everybody who wanted to quit the business; and we do that to some extent even yet. The beginner should be careful, however, and not offer a larger price than he can afford to pay. It is quite a little bother to go after bees, transfer them, and feed them up so as to make a sure thing of wintering.—A. I. R.]

YELLOW-JACKETS DESTRUCTIVE BEE-ENEMIES IN BRITISH COLUMBIA.

In your issue for Dec. 1 you reply to F. W. Knoeger on yellow-jackets. You apparently appear to think wasps are not so very destructive as some make out. Permit me to say that I have experienced considerable trouble from them in the autumn here, having watched them often as they boldly enter the hive, in most instances being attacked, but, so far as I could see, coming out victorious, usually cutting the bee in two, and making a meal of it, after which they re-entered the hive unmolested. You don't give them any notice as bee-enemies in your A B C.

However, all that can be done is done. The entrances are contracted; jars with syrup are placed here and there. This plan catches a lot of them, and, lastly, rewards are given to those finding their nests. While writing you from a country where we have a lot of rain in the winter, with very little frost, and then never down to zero, let me ask, is it advisable to put the bees under a cheap open shed with only a roof, or to leave them on their summer stands under the rain? GEO. H. ROE.

Courtenay, V. I., British Columbia.

MOSQUITO-HAWKS AND YELLOW-JACKETS IN FLORIDA.

On page 1010 W. H. Marshal, of Punta Gorda, Fla., writes of the mosquito hawk, or dragon-fly, and of its destructiveness in the apiary. I also am troubled by this pest, at times, but not to the extent Mr. Marshal seems to be; and my experience as to their time of flight is somewhat different from his. Here they fly more strongly in the evening, or, rather, late afternoon, and in the early morning, and but rarely in the middle of the day unless it be a dull cloudy one. I must admit that my bees appear to be less intelligent than Mr. Marshal's, or more reckless; for when there is any thing for them in the fields they persist in going out for it, regardless of mosquito hawks.

On the same page Mr. F. W. Knoeger tells of an attack by yellow-jackets on his bees. They have been very troublesome to the bees here this fall; in fact, I have never seen them any thing like so numerous before; but I can not find where they have effected an entrance in any case. Great

numbers have been killed by the bees, as their bodies in front of the hives testify. I saw them in several places working at the bodies or fragments of bees, seemingly in an effort to extract what juices remained, or possibly they make use of the more solid matter.

C. S. HARRIS.

Holly Hill, Fla.

YELLOW-JACKETS IN COLORADO; HOW TO KILL.

I see on page 1010 the yellow-jackets are causing Mr. Knoeger's bees to desert their hives. I think he is mistaken. If he will notice closely he will see that they eat the bees alive, then rob the hive. They killed eight colonies for me last summer. They came by the thousands. I tried to poison them, but could do no good. I stopped the entrance of the hive, then took a pan and set it in front with a chunk of honey in it. They would gather on the honey. I would then throw hot water on them. There is not much danger of hurting your bees. I took a colony that they had killed, and opened the hive-entrance, and waited until it was full; then I stopped it up; but I first put some burlap over the brood-frames; then I poured hot water over them. I am afraid to say how many I did kill. If any one knows any better way I should like to hear from him.

My bees are Italians; some of the colonies that were robbed made two supers of honey before they were molested.

Hotchkiss, Colo. G. M. ELLINGTON.

BEST WAY TO START ANEW AFTER WINTER LOSSES.

I wish to increase my apiary, having lost most of my bees last winter. Will it be cheaper to buy queens from the South for the first divisions, and raise queens for later dividing, and increase from those I have (9 stands), or buy bees in box hives (if I can) at \$2.50 or \$3.00 a stand, transfer, and divide them, raising queens myself?

Hyrum, Utah, Dec. 8. EDWIN RALPH.

[I would recommend the latter plan. It would give you stronger colonies for the harvest, or you could divide as suggested for increase.—Ed.]

ANOTHER WAY OF USING FORMALDEHYDE; A SANITARY BOTTOM-BOARD.

During my work with formaldehyde as a cure for foul brood I have constructed a sanitary bottom-board which is so made as to receive the drug without disturbing the bees. With a diseased colony I proceed as follows: Place the sanitary board on the old stand, upon which I put a clean hive with frames and starters. Above this I place the old hive body, and then after smoking the bees and queen down I replace the old body on the old board. I then put on a honey-board and put the old hive on its old stand over the new body. In this

way I can medicate the colony from the bottom-board without any more bother. The larvæ that live will be taken care of, and come out in time. The gas will readily penetrate to all parts of the hive, sterilizing the pollen and honey so that the food made from it for the larvæ will be healthful.

E. A. NEWELL.

Massillon, Ohio.

THE A B C CHILD THAT GREW SO FAST.

Enclosed please find \$1.00 for renewal of GLEANINGS. I feel I could not keep up with the times without it. I have been a subscriber since 1879—known then as the "child that grew so fast."

Colburn, Wis.

E. A. MORGAN.

[About 25 years ago one of our subscribers wrote about a neighbor of his who was taken very suddenly with an acute attack of bee-fever. He got hold of every thing he could on the subject, questioned his neighbors, got some bees, and just went into the business "for all there was in it," as the expression goes. If I remember correctly, at his very first effort, before people would ordinarily be able to distinguish a queen from a drone, he made a big success, outstripping the veterans. This caused him to be styled through the journals as in the heading above. For some time we had reports from him every season, or oftener, and he was still running the business at high pressure. Not long ago I was wondering what had become of him, and behold here comes a letter.

But look here, old friend. How about the bee and honey business? Did you stop growing all at once, or are you "still at it"? That reminds me of something else that I am afraid our people are forgetting, especially when I am off in the woods in Michigan. Every subscriber to GLEANINGS, who has had it continuously for twenty years or more, is entitled to one year free. When you are subscribing, just mention this.—A. I. R.]

MY WAY TO DISPOSE OF SKUNKS.

Tie a light pole, 10 or 12 ft. long, to the trap-chain, and you can carry it safely away from the buildings to dispose of. If you haven't a gun handy, dig a narrow hole 1½ or 2 ft. deep, like a fence-post hole. Let the skunk down into it and kill with a blow of the spade.

JAMES BIRCHARD.

Tabor, Iowa, Oct. 8.

I am pleased to be able to report that we have formed a Jefferson County Bee keepers' Society, with the following officers: Pres., M. C. Harrington, Watertown; First Vice-pres., A. A. French, Black River; Second Vice-president, Pearl Symonds, Rodman; Sec., Geo. B. Howe, Black River; Treas., D. R. Hardy, Watertown. All bee-keepers are invited to join. Dues, \$1.00 per annum.

GEO. B. HOWE, Sec.

Black River, N. Y.



Then answered Peter and said unto him, Behold, we have forsaken all, and followed thee; what shall we have therefore?—MATT. 19: 27.

What shall we have as a reward or recompense for foregoing pleasures a Christian ought not to indulge in? This question often comes up, especially from those who contemplate bearing the cross of a Christian life, as to what we shall receive that will counterbalance the value or the pleasure of these worldly things given up. In our last Home paper I suggested that theater-going was not conducive to the highest state of spirituality. There has been considerable said, also, not only in regard to worldly amusements, playing cards, going to dances, etc., but giving up tobacco, signing the pledge, etc. Many of us are asking the question which seems to have been in Peter's mind as he reminded the Master that they had left all and followed him. The answer our Savior gives seems to average humanity rather extravagant (see Matt. 19: 28, 29; Mark 10: 29, 30; Luke 18: 29, 30), and yet I think that every one who has really left all—every thing that is even questionable—to follow faithfully the Lord Jesus Christ, will be able to testify at any time that the reply is not at all extravagant. When I published the letters from Bro. Whitcomb I felt sure they were going to bear fruit, and good fruit, too, and I wish to submit to you a sample of it. We will let Bro. Whitcomb introduce the matter:

Dear Bro. Root:—The enclosed letter, coming to me this morning, relates an experience which I know will be of deep interest to you. I do not approve of his plan of allowing his copies of GLEANINGS to accumulate unread until the Spirit moves to action, as in this case. But I enclose the letter. I am glad to bear testimony for Jesus to-day, and I feel that I have the witness of the Spirit within my heart this morning.
Friend, Neb., Feb. 1. E. WHITCOMB.

Now, the writer of the following, evidently, did not intend it for print; but I feel so sure, from the spirit of it, that the dear brother will be willing to give his testimony wherever it may do good, I take the liberty of giving it entire.

My dear Brother Whitcomb:—On account of certain events which transpired recently in this community, which had the effect of making me feel sad because of the church's attitude toward some of the many evils which surround it in the present day and age, and because of the meager fruits (spiritual) manifested on the part of many who profess to have been converted to God, and are now in his service, and while meditating and wondering if, when Christ shall make his second appearing, he would find faith on the earth, an impulse unaccounted for seized me to tear the wrapper from a copy of GLEANINGS many of which lie on my desk untouched, since brought in by the mails, and, strange to say, by a peculiar coincidence I selected from at least eight journals so untouched the one in which your glorious conversion is reported. I am not sure, Bro. W., but I could have been heard to say, "Yes glory to God! there is still faith on the earth." And I may say right here that I regard this coincidence as providential. I read the report, and said to myself, "Praise God, his spirit is still operating on the hearts of the people, and his power

is still sufficient to transform men from a life of sin and captivity unto a life of liberty and usefulness." What an uplift the reading of that report was to my soul! How I was made to rejoice that the gospel of Jesus Christ is as much to-day as it ever was the power of God unto salvation to all who believe. I was so elated on reading, and after having taken such a gloomy view of things, that I rushed into the house and read it to my wife, and we both rejoiced. I have also heard several of my friends who came into the store read it, and I noticed it caused on them, as it did on me, the tears of joy to course down their cheeks. So that the return of a soul to God is not only an occasion for joy on the part of the angels in heaven, but also for the saints on earth. Your letter has such a genuine spiritual ring to it that I have no hesitancy in accepting your profession that yours is a religion of the heart and not merely of the head.

I also rejoice in the stand you have taken with reference to the use of tobacco, and also the way you met the Devil's temptations that you could not run a newspaper and be a Christian. Oh, how subtle Satan is! Ever lean on God's infallible promises, and he will surely bring to pass the desire of your heart. You will, no doubt, wonder why I am taking such an interest in your conversion. Well in the first place it is because I am interested in the salvation of souls; and, second, because I claim you as a brother beekeeper; and, furthermore, I can justly lay claim to a short, personal friendship, besides a long acquaintance by reputation. You will, quite possibly not remember me; but we had the pleasure of meeting each other at a convention held in Buffalo six or seven years ago. Now, Bro. Whitcomb, pardon me for giving you just a few words of my experience. While I am in my 44th year, I have nevertheless actually lived, in the true sense, less than four years. At that time God touched my heart in a very similar way to that of your own case; and, oh how thankful I have ever been that I yielded obedience to that call! I have truly enjoyed God's showers of blessing, but it has not been a sunshine. There has been some severe testing, of which I just wish to relate a little for your encouragement.

I also was a victim of the tobacco habit, and was, soon after my conversion, convinced by God that, to continue this habit, was not consistent with Christian living, and there and then resolved with God's help to forsake it. I asked him to help me, and by faith trusted in his power to do so; and he gave me the victor, not only over the temptation to yield, but also over the appetite. But this was not all. You will notice by this letter-head that I am in the mercantile business, and, of course, sold tobacco and cigars. This also looked inconsistent, to sell that to others which I felt condemned in using myself. This caused a tremendous struggle. The Devil plainly told me, "You can not conduct your business successfully without handling tobacco. You will lose trade; people will call you a fool." But through earnest prayer for guidance and help I finally decided to obey my convictions, even though it drove me out of business. I obeyed, and am still in business at the old stand after a trial of over two years; and let me assure you that it is a matter of extreme satisfaction to me, when asked for tobacco or cigars, to be able to say, "We do not handle them."

And now let me encourage you to faithfulness, which I also wish for myself. We have both spent much of our life in sin; let us both, as God gives us grace, live the remainder of our days to his glory. That we may, when our journey on earth is ended, meet in the better land, with all the redeemed.
Bethesda, Ont., Jan. 29. D. W. HEISE.

Why, dear friends, the suggestion that a man will not be prospered in business who lets his religion shine out and through every part of it is utterly ridiculous. Look at the men all over our land who have been suddenly raised to positions of prominence by starting out for truth and honesty and fairness. The ones who are afraid to apply religion to business, who are afraid to tell the truth, no matter where it hits nor whom it hurts, always remain in the background; but the officer of the law who regards his oath of office as something sacred and holy is wanted everywhere. Is it going to injure the standing of President Roosevelt to come

out boldly and declare he does not use tobacco, and never did use it? or is it going to raise him in the estimation of every man, woman, and child in the whole United States?

The idea that it will not do for an editor to let his religion get into his paper, or for a man in the mercantile business to give up the sale of tobacco and cigars, was illustrated most vividly by a story our good pastor told in his sermon last Sunday. I am well aware that I can not tell it as he did. If I could stand by you all I might do a little better; but I will do the best I can in telling it to you in print. When our pastor commenced the story he came out from behind the pulpit; and the good-natured comical look on his face as he commenced gave his hearers notice that something good was coming. You may imagine, if you please, that your old friend A. I. Root has left his place beside the stenographer, and is standing before you while he talks.

THE STORY OF THE BOY, THE DOG, AND THE RABBIT.

One bright morning, after a light fall of snow, a boy started out with his dog. Pretty soon the dog pricked up his ears, and started off on the freshly made track of a rabbit. The boy put after the dog as fast as he could. In due time the two were led into the woods; and, finding the rabbit had gone into a hole, both boy and dog proceeded to dig it out. They found they had a pretty big job on hand, but worked an hour or two before they gave it up, which they finally did because they were both too tired to work any longer, or perhaps it was dinner time. Before abandoning the work, however, the boy kicked in the dirt he and the dog had thrown out, and picked up some bright pieces of mineral that looked as if they might be ores of some kind. He put them in his pocket and carried them home. One evening when he was playing with his geological specimens his father, who sat near reading his paper, glanced over his spectacles to see what the boy was amusing himself with. After questioning the lad as to where and how he got them, the father hunted up an old cyclopedia and spent quite a little time in looking at specimens and reading the description. Next day he went to town and showed them to the principal of the high school. They made some further investigations, which resulted in calling the State geologist. With suitable help they made considerable excavations around where the rabbit had gone into the ground. Perhaps the boy thought that they, like himself, were thinking of nothing but getting that rabbit; but in a little time when men versed in minerals had looked over the locality the father sold his farm for *fifty times* the value he had always been placing on it. The money he received gave the father an opportunity of carrying out a good many projects he had in mind, but which he had been compelled to give up heretofore on account of poverty.

Among these projects was not only the educating of himself in certain lines, but also the fond one of sending his boy to college, and giving him a chance to be of some value to the world.

My story is now ended so far as the father is concerned; but what about the boy and the dog? I suppose the *dog* was a good deal disappointed from the fact that, after all this ado and hard work, they did not get the rabbit. We need not be surprised at this, because a dog's intellect can not well go any further than rabbits. But how about the *boy*? Well, the story goes that *he* continued to weep, and would not be pacified, even though his father tried to persuade him that the rabbit was of no particular account compared with what he and the dog *did* find in digging. Need I suggest the moral? We, citizens of the United States, people whom God has permitted to live in this glorious twentieth century, are, too many of us, setting our aims and aspirations on something of no more account than the rabbit which the boy and the dog did not get. In our stupidity we continue to magnify the value of the rabbit while we ignore and neglect the great treasures that lie peeping out of the earth ready to be picked up if we will only recognize their value. Tobacco, strong drink, the dance-hall, cards, and I should say the theaters, may be represented by the rabbit. The ingots of ore that are kicked around as worthless, while we are scrambling for the rabbit—these ingots that are sometimes tramped into the dirt and mud out of sight, may be represented by truth, honesty, temperance, Christian character, communion with the great Father above, etc. These latter are things that will enable us to rise above our surroundings, to get an education, to hold positions of honor, to labor for the welfare and best interests of the world about us, and to receive finally, in the world to come, *life everlasting*. It is all right to go out with a dog to chase rabbits while we are young; but is it not true that too many of us do nothing of more importance than chase rabbits all the rest of our lives, like the story I told you a few months ago of the man who, with bent back and sad countenance, wasted all his time in raking up leaves, straws, and trash, even while an angel held just over his head a golden crown, proffering it as a free gift if he would look up and abandon his rickety old rake, and give it to the angel that held the shining crown? Bro. Whitcomb and Bro. Heise have told about letting go of these things that would drag us down and not up, and reaching forth for the golden crown that is within the grasp of each and every one. It used to be the fashion in revival times to talk about heaven and the life to come. Just now the world is learning that there is a heaven on earth for all who are willing to put away selfishness, and to receive it at the hands of the Master; for he says that for every thing that we give up we shall receive a hundred fold more in

this present time; and, after life's toils are over, "eternal life." If we think we can not afford to give up selfishness and selfish appetites, we shall go through the world dragging everybody down to our own level, or lower still; but if we start out to serve the Master, even though we do not make very much headway, we shall not only be lifting ourselves up, but all humanity along with us. Which shall it be?



MY "ROASTED-CHESTNUT" POTATO.

Some time last spring friend J. B. Mason, of Mechanic Falls, Me., sent me a sample of potatoes that he said were extra nice for table use. As he took the trouble to prepay the express charges on something like half a peck, I supposed they must be, of course, in some way remarkable. His letter accompanying is not at hand; but he said he had been growing them some years on account of the extra quality, both for baking and steaming. He said if I boiled them they would be apt to "go all to pieces," so he preferred steaming. It was exactly as he said. The potato was very dry and floury, with a peculiar taste not unlike that of a roasted chestnut. The potato is not a great yielder; and as it was of a reddish blue, not only on the outside but on the inside also, it was not very attractive in appearance. Its only recommendation was quality. Now comes the disappointing part of it. When these potatoes were planted in Northern Michigan they were not only poor yielders, but the quality was just ordinary. On that soil it did not reproduce itself. Nothing remarkable about this, is there? To tell the truth, I do not know that I should have ever mentioned it at all were it not that it paved the way for the following:

About the same time, somebody else (his letter is at present up in Michigan) sent me samples of some seedlings of his own originating. One was a fine white potato; the other looked considerably like Mason's blue potato. By the way, I think friend Mason said his potato was a sport from the Blue Lapland that was grown quite extensively years ago. Well, this latter friend who sent me the two kinds of potatoes wrote me again before planting time, telling me to throw away the red ones, as he had since discovered they were all hollow and "no good." I accordingly told the boys to sort out the red potatoes and not plant them. There is a general prejudice against red potatoes, anyhow.

Before I go any further in my potato story, permit me to say that I have tested so many potatoes in times past, and found them to be but little if any better than ordinary, I have not had very much heart in

the work of late years. Quite a number of the brethren have complained that I didn't even report. Well, a potato just now has got to have some very remarkable quality to compete successfully with the good potatoes we already have—Carman No. 3, for instance. After spending lots of time and money in testing the much-lauded new kinds, Carman No. 3 steadily comes out ahead. If you want quality and beauty of appearance, *Freeman* comes out steadily ahead. If you want an extra-early potato, somehow the old Early Ohio bobs up after a little, year after year. When it comes planting time purchasers keep calling for the *Early Ohio*, no matter how strongly seedsmen urge other kinds that are "ten days" or "two weeks" earlier—"better yielder," "better quality," etc. The potatoes that are sent me for trial have, many of them, proved to be very good; but when one thinks of the labor of introducing a new variety, and proving that it will thrive in all localities, he had better think twice before he puts much money in it. Let us now go back.

When I told the boys to sort out and throw away all the red potatoes, they must have skipped half a dozen or more; for every little while we would find, in digging, a red potato among the white ones. I could not think at first how they got there until I remembered what our friend said about the red potatoes being hollow. All together there was nearly a peck. Many of them were of peculiar shape, sharp at one end and round on the other—something like a pear shaped sweet potato. I thought, before throwing them away, I would test some just for the fun of it. When washed up in our spring they looked very nice. Pretty soon Mrs. Root began to scold. First she said those red potatoes were so hard she could scarcely get a knife into them to peel them. She said, furthermore, that every one I gave her, *little and big*, was hollow, and the hollow was black around the outside; so that, in order to get any potatoes for dinner, she had to pare them outside first and then dig into the flinty things to pare off the *inside* where it was dark colored around that hollow. I asked her why she did not throw them away without fussing so much. She replied, "The orders were to test them." She knew by experience that, in testing potatoes, she was expected to obey orders. We both laughed; but when it was dinner time we had one of our "happy surprises." The quality was far ahead of any thing I had ever tasted in the potato line; and when tested by baking they were *almost* equal to a roasted chestnut. And, by the way, did it ever occur to you that the best table potatoes are the ones that are crisp, hard, and brittle when you attempt to cut or pare them? I remember we had, some years ago, some Hubbard squashes that were so heavy and rock-like that we had to pare them with a hatchet or draw-knife. Then when we wanted to cut them up they had to be chopped in pieces

with a hatchet. They seemed almost like oak knots. And these Hubbard squashes were superior to anything we ever got hold of before or since. They were not only dry and mealy, but, under the influence of the heat, every piece of squash opened out like popcorn, and had a rich nutty sweetness. I have sometimes thought we do not have any more Hubbard squashes such as Gregory gave the world when I was a boy. I think we tested these potatoes three times for eating—twice baked and once boiled—and there is about half a peck of them left. The originator who grew them from the seed told me he had given them up because they were all hollow. Why didn't he say something about the *quality*? or was the quality on his ground nothing remarkable? By the way, I might as well own up that my Michigan grown potatoes for the last season were mostly poor in quality for table use, probably owing to the blight; but these red potatoes, right in the middle of the field among the rest, showed this wonderful superiority.

I have now got to the climax of my story. Is there any man, woman, or child, who reads GLEANINGS, who can breed out the *hollowness* of my roasted chestnut potato? I presume that experts in this line of work would tell us we must make the potato bear some seed-balls, then we may get from these seed balls a potato of the same quality without being hollow. A good many of the potatoes I grew up in Michigan produced immense seed-balls two years ago. Last season I did not notice any—perhaps owing to the blight. I do not know exactly what to do with my half peck. I want some of our expert potato men to give me their opinion in regard to the probability that these potatoes might be grown without hollows, on some different soil. Perhaps we should then lose the quality. One season the New Craig potato showed many hollow ones. As an experiment we planted these hollow potatoes, but the crop was entirely sound.

On page 199, 1902, I gave an article from the *Rural New-Yorker*, entitled "An Elusive Radish." After several years of experimenting, the writer tells us how he succeeded in getting exactly the radish he wanted; but just as he was shouting "*Eureka!*" over his success his radish slipped out of his grasp. Will this be likely to be the case with my potato? I shall continue to grow them for the quality—that is, if the quality keeps up in different soils, even if they are hollow. But if we can get rid of the hollow, I think some of our prominent seed-men would pay a large price for the potato.

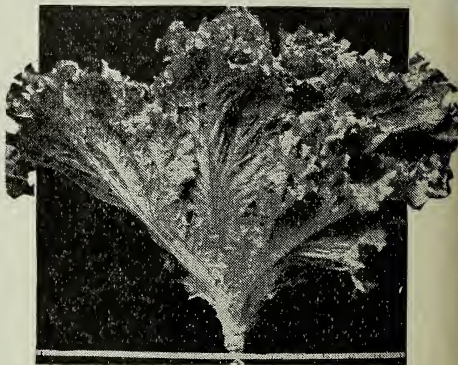
Mrs. Root objects to the potato because it is too hard to pare; but we can get around this objection by baking them, or boiling them with the "jackets" on. But who wants a potato, baked or boiled, with a dirty black hollow inside of every one of them?

PEACH TREES One year from bud, 2 to 4 cents each.
Also plum, apple, pear, etc.
Circular free. R. S. JOHNSTON, Box 43, Stockley, Del.

GRAND RAPIDS

LETTUCE

Introduced by Mr. A. I. Root in 1888, now a standard sort for greenhouse culture. A good many acres of glass are devoted to its growth. It is the ideal lettuce for this purpose; and only where the market still clings to the head-lettuce has it a rival. The plant is a vigorous and heavy grower. It will stand a remarkable amount of abuse. Extremes of heat and cold have little effect upon it, and the rot rarely affects it greatly.



A SINGLE STALK WEIGHING 14 OUNCES, grown at the Ohio Agr. Exp. Station.

For the home garden it has no peer; there is no reason why it is not found in every garden. It will stand a great deal of neglect. Sow in the open ground and you will soon have a supply of delicious, tender leaves. By successive sowing and thinning you can have all you want, just when you want it. Try a package.

Per package, 5 cts.; ounce, 8 cts.; $\frac{1}{4}$ lb., 25 cts.; pound, 75 cts., prepaid. By express, per pound, 60 cts.; 5 pounds, \$2.50; 10 pounds, \$4.00.

Send for our complete catalog of Vegetable Seeds.

E. C. GREEN & SON

(SUCCESSORS TO A. I. ROOT, seed dept.).

MEDINA, OHIO.